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Handbook on USSR Military Forces: Chapter V, Tactics. 1 November 1945

War Department (USA)

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Technical Manual, TM 30-530
Handbook on USSR Military Forces
Chapter V, Tactics
1 November 1945

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Technical Manual, TM 30-430, Chapter V, 1 November 1945

**Handbook on USSR Military Forces
Chapter V, Tactics**

**War Department
Washington, DC**

Comments

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Abstract

TM 30-340, Handbook on USSR Military Forces, was “published in installments to expedite dissemination to the field.” TM 30-430, Chapter V, 1 November 1945, “Tactics,” is a detailed discussion of Soviet tactics for using particular types of forces and for particular types of operations and conditions. This chapter is illustrated with numerous maps, diagrams, and charts.

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A Note on Scholarly Usage

Since revised editions of Army manuals are customarily issued with the same manual number and title as the previous editions, the minimal scholarly citation must contain the date of issue. The minimum unambiguous citation for this chapter is TM 30-430, Chapter V, 1 November 1945.

CHAPTER V

TACTICS

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CHAPTER V

TACTICS

INTRODUCTION

1. SOVIET TACTICS PRIOR TO 1942

At the beginning of the Russo-German War, June 1941, the Red Army tactical doctrines, which had developed from a mixture of Western European practice and original thinking, were still largely theoretical and untried. It is true that Red Army leaders had made careful studies of World War I, the Russian and Spanish Civil Wars, and the first year of World War II. As early as 1933, Red Army officers had formulated basic concepts of tank and moto-mechanized warfare. At Nomonhan and in the Finnish War, they gained experience in the strengths and weaknesses of armor. The critical importance of small-unit infantry tactics, the necessity of coordination and flexibility in maneuver and fire power, and the methods of artillery-infantry-tank rupture of a powerful fortified position also had been clarified in the Finnish War. But these lessons were not fully digested, even by higher officers. Rapid mobilization between 1937 and 1941 had brought great numbers of inexperienced leaders into service. The tactical modernization of the Red Army had just begun when the Germans invaded the U. S. S. R.

In 1941, command was concentrated in the infantry staff, although artillery was receiving continually increasing responsibility. The basic operational unit was the powerful infantry division, nearly 18,000 strong, with two regiments of artillery and a battalion of tanks. Except in the Far East, the corps was the highest organized command structure.

Full emphasis upon combat intelligence was not yet evident, although notable beginnings had been made in the development of aerial phototopography, special maps, and photographic ground reconnaissance; and sound ranging was in an advanced stage. Schemes of maneuver and combat dispositions in the offensive were conventional, featuring a predominance of frontal terrain objectives and deeply echeloned infantry assault forces.

Sound defensive doctrines existed. These showed thorough appreciation of the importance of depth, all-around security, successive obstacle systems covered by fire, and the employment of artillery in counterpreparation and antitank action. Staff work was detailed and slow, with written orders being employed as low as the regiment. Coordination presented a notable weakness; commanders overstressed personal leadership to the detriment of control. Supporting arms were not fully exploited. Signal planning and techniques—especially the employment of radio—were deficient.

In infantry tactics, the concepts of fire, maneuver, infiltration, and encirclement were beginning to crystallize. Mixed teams of infantry, engineers, and direct-fire artillery for special missions were not yet in evidence. However, rapidly prepared field fortifications, excellent camouflage, and the mass use of specialized snipers were standard practices.

Throughout the years prior to World War II, the Red Army concentrated attention on artillery tactics and techniques. By 1941, considerable progress had been made in analyzing artillery capabilities; developing observation and fire direction; employing destruction fire, barrages, and concentrations; and in handling artillery organizations. Four artillery divisions existed. The lack of heavy mortars and of massed mortar fire was an important deficiency.

Large-scale employment of armor was still in its infancy, with experimental tank divisions being the most powerful mechanized units. Technical equipment was not fully developed, while the roles of infantry, engineers, and supporting fire power in armored operations were incompletely understood. In contrast, large horse cavalry units had not been neglected; a powerful cavalry arm, coordinated with artillery and armor, existed at the beginning of the war.

The Finnish War provided excellent experience in winter operations and in the assault of fortified positions.

The first phase of the Russo-German War, June to November 1941, was a costly delaying action by the initial protective forces of the U. S. S. R. It revealed the tactical weaknesses of the prewar army; at the same time, new techniques were improvised. Deep obstacle systems justified themselves thoroughly, as did artillery—especially in the new role of direct fire. Combat in encirclement and partisan warfare proved effective.

By November 1941, the mobilized reserves of the U. S. S. R. were ready, and could be thrown in for powerful counterattacks at Tikhvin, Rostov, and Moscow. Between November 1941 and May 1942, the Russians engaged in a winter-spring offensive which nearly broke the German lines, but at great cost. The soundness of husbanding reserves for counteroperations at the critical time and the effectiveness of infiltrating ski units and large-scale cavalry raids were fully proved. Yet many weaknesses were evident. At Rostov (November 1941), the absence of motorized infantry, self-propelled artillery, and motorized bridging equipment prevented the Red Army from annihilating the encircled German forces. On the Central Front (January–April 1942), lack of air cover led to the destruction of the cavalry supply lines and nullified the offensive. At Kharkov (May 1942), inadequate flank protection for the advancing mechanized salient produced disaster.

2. NEW TACTICAL DOCTRINES

The High Command of the Red Army studied the reverses of 1941 and 1942 assiduously. By the autumn of 1942, it had assimilated the combat lessons of the war, formulated radically new combat regulations for the arms and the staffs, developed new organizations, and begun mass production of fully modern equipment.

As a result of this tactical evaluation, command responsibilities were specifically divided between the commander and staff of combined arms, and the chiefs of arms and services. The Commander became responsible for plans of maneuver and direct control of critical phases of an operation. His staff assumed the function of coordination, while the chiefs of arms and services were charged with detailed planning and control of their particular elements. The army became the basic planning and command group; army group and even several headquarters coordinated major operations. Uncompromising thoroughness of reconnaissance was required, both by combined and specialized arms.

Operation procedures were developed for systematically disseminating intelligence directly to using agencies. New tactical schemes were brought forward: converging double envelopment, parallel pursuit, and centralized and decentralized defense. The major development in staff work was the required employment of precise tables of combat coordination, which assured continuous, systematic cooperation of all arms. Such cooperation was further aided by advances in tactical signal communications, including the formation of special command, staff, cooperation, and other nets.

Reserves were committed in concentrated blows to exploit successes. The maneuverability of infantry was now organized and exploited to the utmost; the employment of small, mixed teams with heavy fire power facilitated infiltration, encirclement, and hasty defense. Deep echelon systems were replaced by wide frontal formations which promoted better lateral control and more flexible maneuverability. Artillery became the main striking force of the Red Army. The new concept of the “artillery and air offensive” embodied the responsibility of the artillery to coordinate *all* supporting fire power and to provide overwhelming fire power in anticipation of infantry requirements. To achieve this goal, large numbers of artillery organizations—artillery divisions, mortar divisions, antiaircraft artillery divisions, artillery brigades, etc—were formed. Direct fire became a normal function of all types of artillery. In general, artillery was used with great aggressiveness.

To implement deep mechanized operations, two basic types of mobile corps were created: the tank corps and the mechanized corps.* The tank corps, operating with infantry, had a high proportion of tanks and great shock power suitable for penetrations. The mechanized corps, with a large motorized infantry component and fewer tanks, was best fitted for exploitation. In addition, some ordinary infantry was motorized for special operations; shuttling by motor increased the mobility of still other units. The cavalry corps, aided by strong armor and artillery, retained a major role in special operations.

Engineers operated in immediate conjunction with assault waves, not only breaking gaps through minefields and obstacles, but also providing immediate

*The Red Army “tank corps” has no U. S. equivalent, but approximates a U. S. armored division. The “mechanized corps” resembles the German *Panzer Grenadier* Division and incorporates both armored and motorized infantry with tanks. (See ch. III.)

defense of newly won positions. Balanced, powerful tactical antiaircraft gun units (12.7-mm, 37-mm, and 85-mm), operating in close coordination with friendly fighter aircraft, helped prevent repetition of earlier disasters from hostile air action.

In special operations, the technique of river crossings especially was perfected. Crossings on a wide front, powerful artillery support, use of improvised as well as table-of-organization equipment, and rapid construction of timber bridges were characteristic. Tactical surprises such as underwater bridges were introduced. Defensive and offensive fighting in cities received careful attention. The Soviets clearly realized the importance of detailed reconnaissance, direct-fire artillery, and aggressive and rapid action by infantry well equipped with sub-machine guns and grenades.

3. TRENDS SINCE STALINGRAD

The basic tactics of the present Red Army were formulated in 1942 and were revealed for the first time in the victory of Stalingrad.

Following the Stalingrad campaign, modifications of Soviet tactics were governed by the need of destroying deep, bitterly defended German positions, and by the availability of increasing quantities of modern matériel and well trained officers. Consequently, heavy mine-clearing, bridging, and flame-throwing tanks have been introduced; assault engineer-pioneer brigades have been developed; artil-

lery has been reinforced by superheavy equipment; and mobile corps have been provided with stronger echelons of self-propelled artillery, mortars, and rockets. As a result of these measures, operations even against powerful positions can progress rapidly. At the same time, mobility and flexibility of control have increased. Greater motorization and the use of ducks and amphibious tanks have speeded operations. Partial decentralization of control from army to infantry corps, has facilitated more rapid reactions to unexpected situations.

A number of future trends are foreseeable at present. Undoubtedly, the main patterns of current Soviet tactics will continue. But even more aggressive tactics may be promoted by light, powerful weapons for the infantry—particularly of the recoilless type—with such conservative motorization as will not reduce maneuverability. Also, improvements in engineer equipment may facilitate rapid exploitation by mechanized forces. The continuous dominating role of artillery will probably be maintained, especially by coordinated employment of very long range weapons (V-type) and self-propelled types. The trend toward decentralization of operating control to units of moderate size, such as corps, will probably continue. The tendency toward concentrating GHQ units (tanks, artillery, engineers, etc.) into large, specialized organizations for commitment in main efforts will, most likely, be maintained.

PART I. EXERCISE OF COMMAND: COMBINED ARMS

Section I. THE COMMANDER, THE STAFF, AND THE CHIEFS OF ARMS AND SERVICES

1. COMMAND

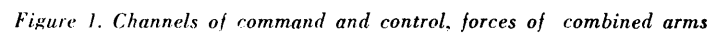
The command doctrine of the Red Army is characterized by specific definition of the responsibilities of the Commander of Combined Arms, his Chief of Staff, the staff, the chiefs of arms and services, and command liaison officers. The Commander of Combined Arms is the senior officer of the primary mobile arm—infantry, tanks, or cavalry—in the formation.* He is responsible not only for over-all

success or failure, but also for direct personal control of reconnaissance and operations in critical areas and phases of combat. The initial scheme of maneuver and the employment of reserves are especially his responsibilities.

The Chief of Staff, second in command, is responsible for all secondary and routine operations. The staff assists him in over-all planning, reconnaissance, coordination, combat security, signal communications, and supply control of operations. The chiefs of arms and services are charged with the detailed planning and supervision of the operations of all elements of their arms or services within the combat team. They command those elements of their arms or services which are not attached to subordinate units.

Command liaison officers are senior officers, often members of the staff or chiefs of arms and services,

*The Red Army "formation" (*Soyedineniye*) has no exact U. S. equivalent but approximates a large-scale combat team, being a division, brigade, or comparable organization of normal, reduced, or reinforced strength. A stable, tactical grouping of necessary arms and minimum services, a Red Army formation is designed to execute one phase of a large operation, such as a penetration, an exploitation, a delaying action, or a counterattack. Hereafter "formation" is used in the Soviet sense.



who represent the Commander in controlling operations along axes of secondary effort (fig. 1).

2. STAFF OPERATIONS

Contrary to U. S. practice, the staff in the Red Army is an advisory body to the Chief of Staff and not to the Commander. With data supplied by the staff, the Chief of Staff prepares the estimate of the situation and makes conclusions and recommendations for the approval of the Commander.

One of the fundamental functions of the staff, repeatedly stressed in Soviet doctrine, is to organize and assure uninterrupted coordination between all arms and services throughout all combat phases. The staff, chiefs of arms, and commanders of subordinate and reserve units participate in developing coordination, their basic objective being to provide continuous and effective artillery, mortar, aviation, engineer, and other support for the infantry and tanks.

The staff of a Red Army formation of combined arms, down to corps level, consists of the following sections: Operations, Intelligence, Signal Communications, Statistical Control, Rear Services, Topographic and Headquarters Administration. (No Topographic Section is found in the division.) Occasionally Training and other special sections are added.

a. Operations Section. The Operations Section is the senior section of the staff. Its chief is concurrently deputy to the Chief of Staff. He is fully informed of the situation at all times; he personally prepares field orders and the more important combat reports.

The Operations Section secures and compiles data on the situation, estimates the comparative strength of friendly and opposing forces, and prepares field orders, operations, summaries, and situation maps. It plans coordination between arms, and is therefore responsible for all liaison with other units, and for the coding service. It directs combat training. It is specifically charged with ensuring operational security by organizing antitank, antiaircraft, and antigas defense; traffic control and camouflage discipline; and defense of the rear echelon and the command post.

In the Operations Section, the first assistant is deputy to the chief of the section and is charged with controlling the operations of the subordinate units. The second assistant organizes coordination with higher headquarters and adjacent units, as well as within his own staff. The third assistant is respon-

sible for all matters pertaining to combat security and training. In formations without a chief of the air arm, an air subsection is generally maintained in the Operations Section. A meteorological subsection may also be maintained.

The Operations Section directly controls the staff coding service and the headquarters commandant.

b. Intelligence Section. The Intelligence Section is charged with the planning and preparation of orders, and to some extent with the conduct of operations pertaining to the collection, evaluation, interpretation, and dissemination of information of the enemy. Its primary function is to keep the Commander, and all others concerned, informed regarding the enemy's situation and capabilities. It usually includes subsections or teams for order-of-battle studies and prisoner-of-war interrogation. All intelligence is reported by the chief of the section to the Chief of Staff and the Chief of the Operations Section.

c. Signal Section. The Signal Section organizes and maintains all necessary signal communications, and allots signal equipment to troops. It assigns radio frequencies and prescribes signal procedure. In cooperation with the Operations Section, it prepares radio-signal charts and systems of transmission, and organizes a time-signal service. It also plans, installs, and supervises the aircraft warning net; organizes postal and air mail services; and operates the message center. Furthermore, it conducts signal reconnaissance—particularly interception of communications and survey of locally available facilities. It submits signal summaries as necessary. The Chief of the Signal Section also commands the signal troops of the formation.

d. Topographic Section. The Topographic Section gathers and analyzes all terrain data. It organizes geodetic, topographic, and photogrammetric services, providing troops with maps and catalogues of benchmarks. The work of the Topographic Section is closely linked with the parallel duties of the artillery staff, which takes over all topographic functions on divisional and lower levels.

e. Rear Services. Since 1944, the Rear Services, Statistical Control, and Headquarters Administration Sections have normally been removed from the staff, and placed under the Deputy Commander for Rear Services.

The Rear Services Section organizes, maintains, and provides for the security of rear echelon installations and lines of supply and evacuation. It provides transportation facilities for the timely de-

livery of supplies in accordance with the policies of the Commander and instructions of the Chief of Staff. It coordinates transportation, supply, and evacuation requirements of the arms and services; prepares summaries; and regulates traffic. It requests from higher headquarters the additional facilities necessary for efficient operation of its installations, and allots these facilities to subordinate units as required.

The Statistical Control Section deals with personnel matters, tables of organization and equipment, strength reports, and replacements. It keeps records of all personnel, animals, equipment, casualties, captured equipment, and prisoners of war.

The Headquarters Administration Section keeps records, provides quarters and food for headquarters personnel, and controls military police and all administrative matters pertaining to the formation.

3. CHIEFS OF ARMS AND SERVICES

The chiefs of arms and services in a formation of combined arms have administrative and planning responsibility for all organic and attached units of their arms or services.

They command all such units not attached to subordinate organizations. As command liaison officers, they generally supervise the performance of key missions within the scope of their arm or service. As assistants to the Chief of Staff, they advise the Commander on matters pertaining to tactical and technical employment of the arms and services. Each chief of an arm or service develops operations, reconnaissance, and rear-area plans for his arm or service. In accordance with the requirements and within the limits set by the commander, each initiates requisitions for the procurement of equipment and supplies for his particular arm or service within the formation.

In addition to the responsibilities which are common to the chief of every arm or service, certain other responsibilities are specifically allocated. The Chief of Artillery is responsible for the organization of antitank and antiaircraft defense and for the procurement and distribution of all ammunition. The Chief of the Signal Service is responsible for the designation of coordination signals. Together with the Chief of Staff, he must be present at the announcement of the command decision. Together with the Chief of Artillery and the Chief of the Air Service, he establishes the aircraft warning service. The Chief of Engineers is responsible for camouflage and, together with the Chief of Artillery, for antitank de-

fense. The Chief Chemical Officer is responsible for the defense of the entire formation against chemical warfare.

4. LIAISON

Liaison is handled by the liaison officers' service organized by the Chief of Operations under instructions of the Chief of Staff. In divisional and corps headquarters, officer personnel of the Operations and the Intelligence Sections are as a rule assigned to this task. Liaison duties are divided between "command liaison officers" and "liaison officers."

a. Command liaison officer. A command liaison officer is dispatched from a higher commander of his headquarters to a subordinate unit. He must be a responsible senior officer (often the commander of an arm or a service) authorized by the Commander to supervise the execution of a combat mission. He is appointed and briefed personally by the Commander or the Chief of Staff.

The principal duties of a command liaison officer are to transmit his commander's orders to the subordinate unit, and to inform his commander of the actual situation, condition, and requirements of the unit. He must be thoroughly familiar with the mission and plan of operations and subsequent plans of his commander, which are fully described in the card given him personally by the Commander or the Chief of Staff.

Whenever necessary, the command liaison officer visits the troops to check on the execution of orders; he reports his findings both to his chief of staff and to the commander of the subordinate unit. If the decision of the subordinate commander is obviously inexpedient and threatens to disrupt the general plan of action, the command liaison officer must report this decision to his own commander before it is carried out.

b. Liaison officer. A liaison officer is an officer of a subordinate unit dispatched to a higher or a cooperating headquarters. He is dispatched by the Chief of the Operations Section, either for a definite period of time during a battle, for purposes of exchanging information and of intercommunication, or from time to time to carry out individual assignments. He remains with the Operations Section of the higher unit and is subordinate to its chief. He also reports to the Chief Signal Officer.

c. Lateral and support liaison. Liaison between adjacent units (lateral liaison) is maintained as a rule by direct communication. Between a

battalion headquarters and a right flank battalion a direct telephone line is used, while contact with other battalions passes through the regimental headquarters.

Liaison between supporting and supported units, if established, is the function of the supporting unit. Field artillery habitually establishes liaison with supported units for the primary purpose of obtaining information as to the needs for supporting fire. For example, liaison is established by direct-support artillery battalions with the supported infantry battalions and also with the infantry regiment.

Section II. COMBAT INTELLIGENCE

1. OBJECTIVES

The elements of intelligence essential to a command decision in the offensive are, according to Red Army doctrine, the enemy combat dispositions and feasible approaches to the deep flanks and to the rear of the enemy main body. On the defensive, the Soviets consider it fundamentally vital to know the possible approaches to the main battle position, the direction of the enemy main effort, and the location and composition of his reserves. In every type of operation, precise determination of critical orientation points is essential for combat coordination.

2. RESPONSIBILITY

a. The Commander. On the basis of personal reconnaissance of the general situation, supported by information supplied by higher headquarters, the Commander initiates reconnaissance by advising his staff, through the Chief of Staff, as to what information is required, when it is desired, and what units may be employed. During the subsequent preparation for battle and during the course of battle, the Commander conducts command reconnaissance and gives additional missions to the reconnaissance agencies. The Commander is also responsible for the continuous training and coordinated employment of the Intelligence Staff and intelligence agencies, and for cooperation between staff sections.

b. The Chief of Staff. The Chief of Staff is responsible for carrying out the Commander's orders and for initiating necessary reconnaissance in the absence of instructions from the Commander. He develops the essential elements of information designated by the Commander, translates these into reconnaissance missions, combines these missions with the directives of the higher headquarters, and personally

assigns them to the Chief of the Intelligence Section. The Chief of Staff designates time limits for reporting information. He insists on continuous exchange of information between Intelligence and other staff sections. All intelligence plans and summaries are signed by the Chief of Staff.

c. Chief of the Intelligence Section. The Chief of the Intelligence Section presents on demand the enemy situation, together with his evaluation of enemy capabilities and the validity of each source of information. He supervises the work and training of the Intelligence Staff. He is personally responsible for dissemination of intelligence to interested officers and headquarters, and for notifying the higher and neighboring headquarters of the composition, time schedules, and zones of action of his reconnaissance units. Jointly with the Chief Signal Officer, he prescribes the signal codes for reconnaissance units.

d. Intelligence Staff. The Intelligence Staff, under the supervision of the Chief of Intelligence, formulates the intelligence and observation plans, and evaluates, collates, and disseminates the resulting information in periodic and special intelligence summaries. The staff also insures maintenance of contact and exchange of information with subordinate units, and it is responsible, with the cooperation of the Operations Staff, for the establishment and functioning of observation and listening posts.

INTELLIGENCE PLANS. In drawing up all intelligence plans, the following general steps are applied:

- Determination of objectives which would yield required information.
- Disposition of reconnaissance units according to the principle of concentration of forces on salient problems.
- Assignment of single specific tasks to each reconnaissance unit (further tasks may be assigned after the completion of the initial one).
- Installation and maintenance of communications with the reconnaissance units.
- Maintenance of a reconnaissance reserve to replace missing units and to retain operational flexibility of the intelligence plan.

The intelligence plan, an operational document of headquarters, is approved by the Chief of Staff and is not disseminated. Intelligence plans of the specialized arms and services vary in detail. Every

intelligence plan, however, must indicate the following:

- The mission of the formation.
- All available information on the enemy.
- Nature, source, and schedule deadline of required information.
- The composition of each reconnaissance unit, its mission, and its zone of action.
- Time limits for reports, the route back, and the area where prisoners have to be captured.
- Means of communication with reconnaissance units.
- Order of relief of reconnaissance units.
- The composition, strength, and possible tasks of the reconnaissance reserve.

The observation plan is prepared by the Operations and Intelligence Staffs. It shows the location of each observation post with the sector of responsibility and dead areas. In terrain and weather which are unfavorable for observation, the observation plan is augmented by a "listening plan."

The Intelligence Staff coordinates its combined intelligence plan and the intelligence plans of subordinate headquarters in accordance with directives from higher echelons. For example, the Intelligence Staff Section of an army coordinates the intelligence plan of the army and its subordinate units (infantry divisions and units of specialized arms and services attached to the army) with the intelligence plan of the army group. The chief of intelligence of each arm and service coordinates the intelligence plans of his own and all subordinate staffs with the plan of the formation of which he is a part, and with the directives of the next higher echelon of his arm or service. For example, the chief of intelligence of army engineers coordinates the intelligence plans of all engineer units of the army in accordance with the directives of the chief of engineer intelligence of the army group. This plan is then submitted to the Intelligence Staff of the army which modifies it in accordance with the combined intelligence plan (fig. 2).

COMMUNICATIONS. The establishment of signal communications with reconnaissance elements is the responsibility of intelligence staffs. Each intelligence observation post must have wire communications with the command post. Radio communications are established with mobile reconnaissance units. In the event of prolonged operations over a

sector considerably removed from the command post, a forward information collection station is established, with reliable wire or radio communications with the command post. Wide use is made of intelligence liaison officers for the collection of information and control of reconnaissance patrols.

e. Information collecting agencies. Intelligence is obtained from higher echelons and from neighboring units; raw information is collected in the lower echelons through ground reconnaissance, air reconnaissance, technical reconnaissance, and special agents.

Ground reconnaissance is carried out by specially trained troops which are organic to all units down to regiments of combined and specialized arms. Air reconnaissance is carried out by observation squadrons and by combat aviation. Technical reconnaissance—such as sound and flash ranging, radio location, and ground photography—is carried out by technical troops and by specialized arms and services. Special agents, operating in rear areas of the enemy, are controlled by armies and higher echelons; these agents collect information which is usually related with strategic tasks.

In addition to collecting essential elements of information which are ordered by the Commander or the Chief of Staff, the agencies are continuously responsible for the following:

- Location of concentration areas and the number and type of troops which occupy them.
- Location of antitank and antipersonnel obstacles and minefields.
- Location of firing points and sectors covered by them.
- The system of defense.
- Information on routes and system of supply and evacuation.
- Location of flanks and weakly held sectors.
- Capture of prisoners and documents disclosing the groupment and intentions of the enemy (sectors in which the prisoners are to be captured are often designated by the Commander).
- Information on the condition of terrain and road nets which would influence the employment of technical equipment and armor.
- Information indicating probable directions of attack, counterattack, and withdrawal.

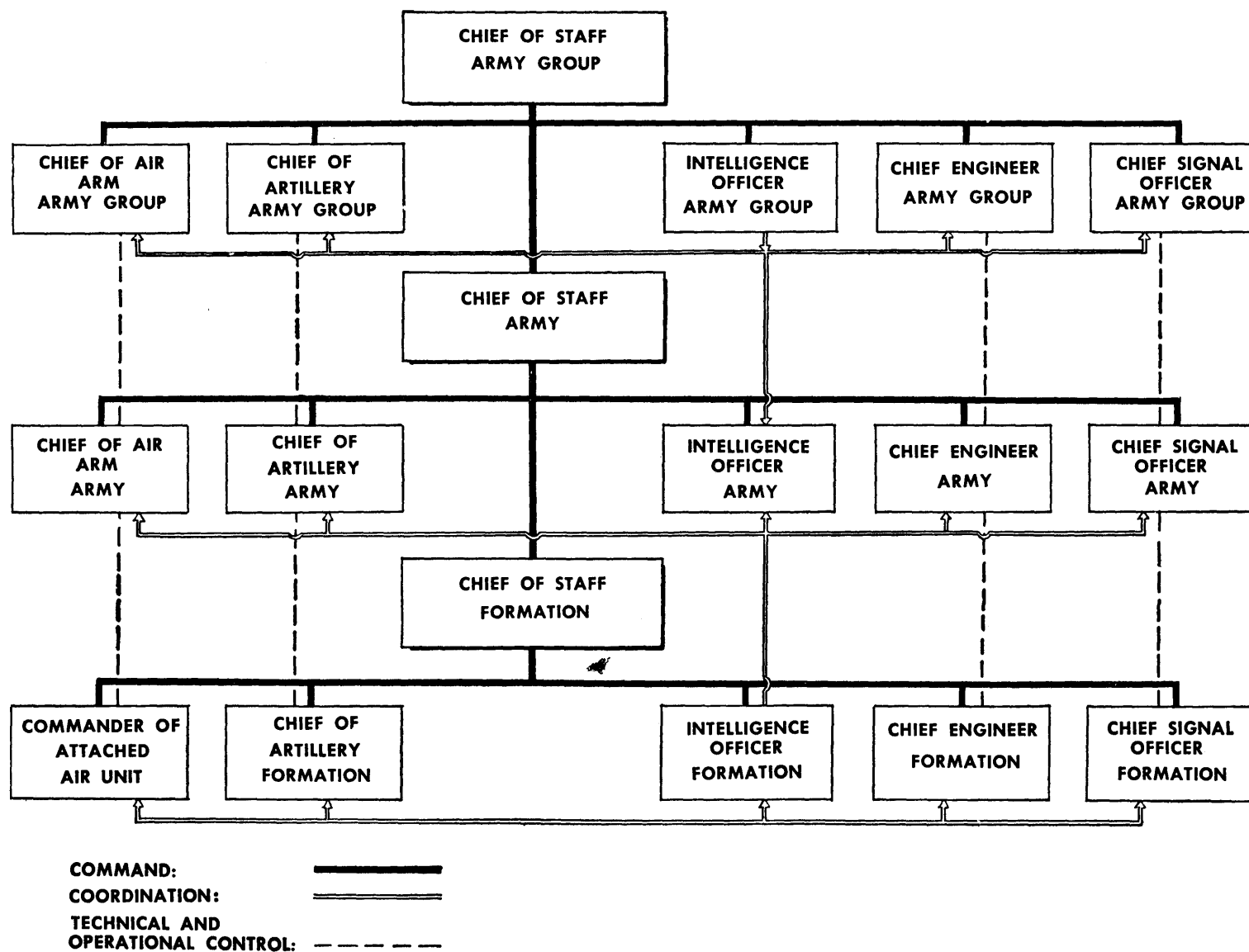


Figure 2. Channels of command and coordination of intelligence.

f. Chiefs of arms and services. In addition to the responsibility for the conduct of reconnaissance in their particular branch, the chiefs of arms and services are responsible for certain technical aid necessary for the over-all operation of intelligence. For example, the Chief of Artillery is responsible for the surveying of key observation posts and coordinating points, and for weather intelligence (Meteor-

3. RECONNAISSANCE AND OBSERVATION

The mission of reconnaissance in the Red Army is to obtain a complete and continuous picture of the enemy's capabilities and intentions, to be used as the basis for correct planning and retention of the initiative in the offensive. In order to accomplish this mission, reconnaissance must cover the entire front of a unit; must be carried out by units already

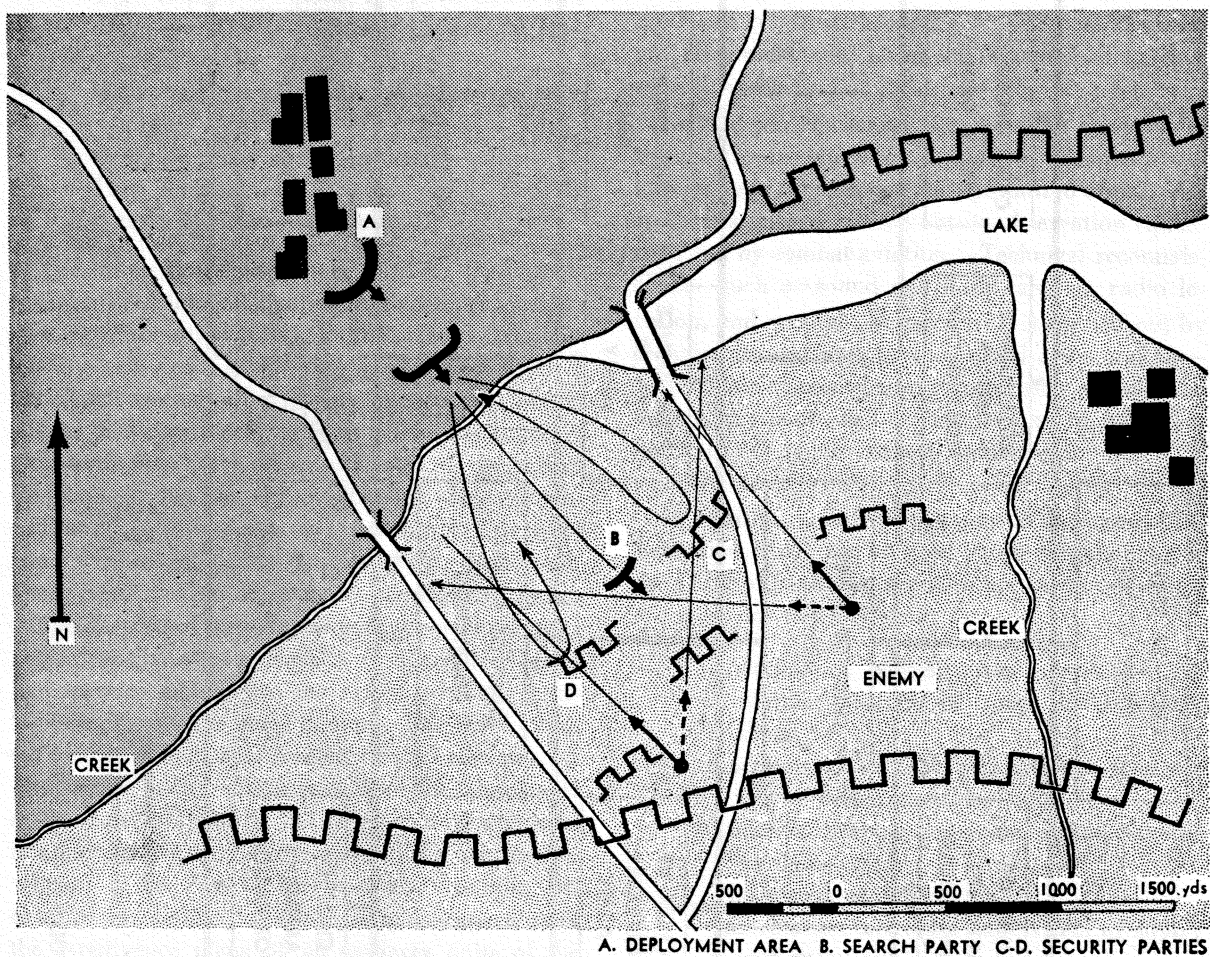


Figure 3. Search plan.

ological Sections can also be attached to the Operations Sections of higher staffs). The Chief of the Air Arm is responsible for air observation and photography, and, jointly with the Topographic Service, for photo-interpretation. The Chiefs of Signal Communications, Engineers, and Chemical Warfare Service are responsible for supplying equipment and personnel of their branch to the reconnaissance units of combined arms.

in line; must be aided by the diverting reconnaissance of neighboring units; must be conducted without revealing the plan of attack; and must be concentrated on the specific problem at hand. Reconnaissance is carried out by specially trained detachments which are assigned to all major units.

The purpose of strategic reconnaissance is to secure all information for the use of staffs in planning and controlling operations. It is usually con-

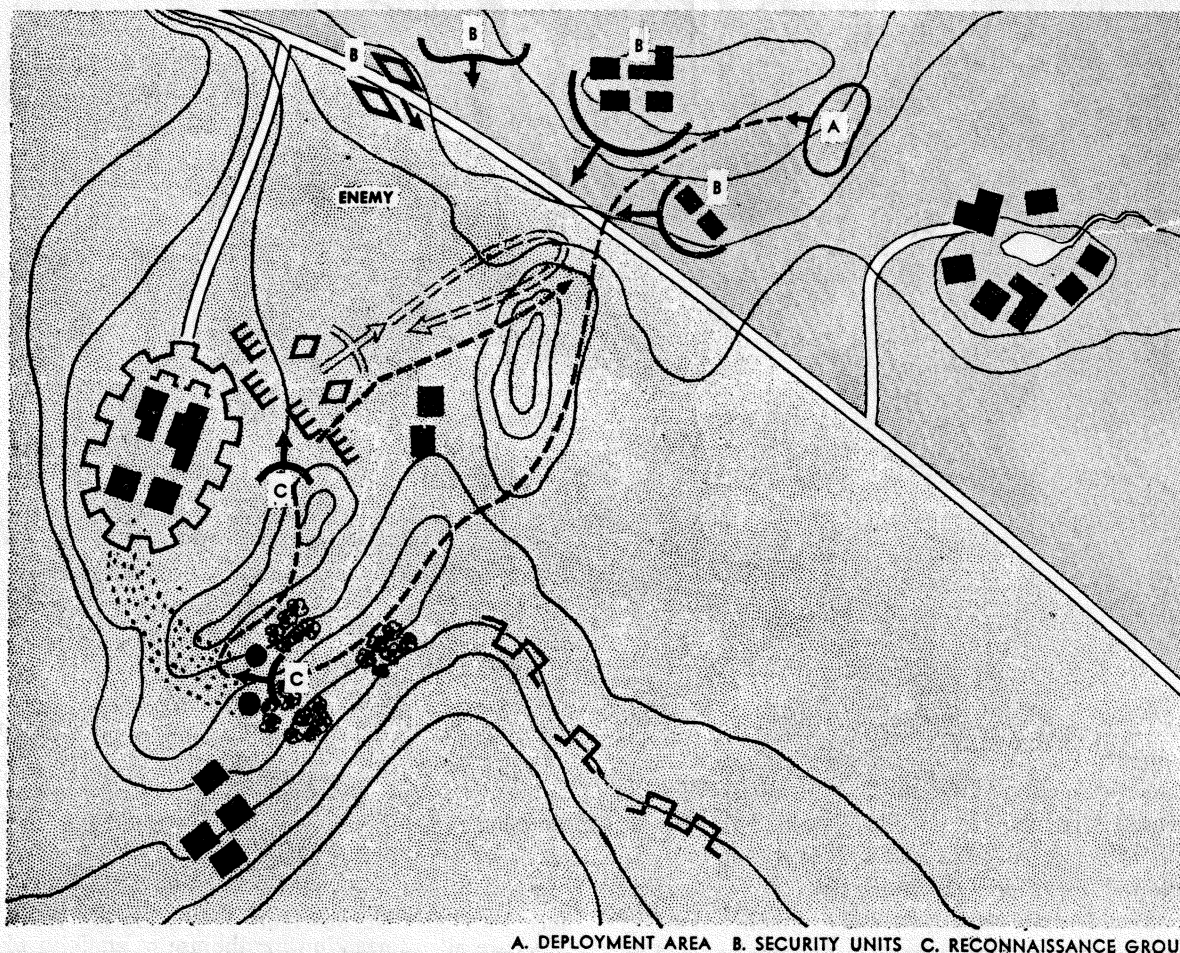
ducted by staffs of an army or an army group. Its organs are aviation, mobile reconnaissance units, technical units, and special agents. Strategic reconnaissance is conducted to determine the following:

- Disposition of enemy forces from the forward lines to strategic reserves.
- Terrain occupied by the enemy.
- Terrain which would have to be used by friendly troops for deployment and attack.
- Terrain conditions, including roads and soil, of the region of prospective operations.

Technical reconnaissance is conducted by small, highly specialized units equipped with accurate optical, photographic, sound-ranging, meteorological, and radio-locator (radar and RDF) instruments. These technical units execute observation and reconnaissance beyond the technical capabilities of troop units. They are controlled by army and higher echelons.

a. Infantry reconnaissance. Tactical reconnaissance is usually organized and controlled by the commanders of formations. It attempts to determine the disposition of enemy units, fire positions, obstacles, and tactical reserves, and other factors (particularly terrain and routes of approach and withdrawal) which may affect the employment of troops in battle. Forms of tactical reconnaissance are raids, infiltration, and ambush (figs. 3 and 4). Stress is laid on careful preparation for each task, cooperation with supporting units, and skill of individual scouts. As a rule, a group charged with a particular task is supported by one or more security detachments.

The purpose of reconnaissance in force is to disclose the fire plan, scheme of defense, location of tactical reserves, and defensive installations of the enemy, and to capture prisoners. It is initiated by the commanders of divisions and regiments who also



A. DEPLOYMENT AREA B. SECURITY UNITS C. RECONNAISSANCE GROUP

Figure 4. Reconnaissance plan.

determine the size of the reconnaissance and supporting units. Red Army doctrine emphasizes that in organizing reconnaissance in force too much importance cannot be given to the selection of personnel; to thorough planning and coordination of the operation; and to detailed rehearsal in daylight and at night under conditions similar to those of the

The establishment of continuous observation is a responsibility of all headquarters. During offensive operations and reconnaissance in force, command observation is mandatory. Observation posts must be selected by staff officers, and these posts must have independent wire communications with the command post. An observation diagram showing the

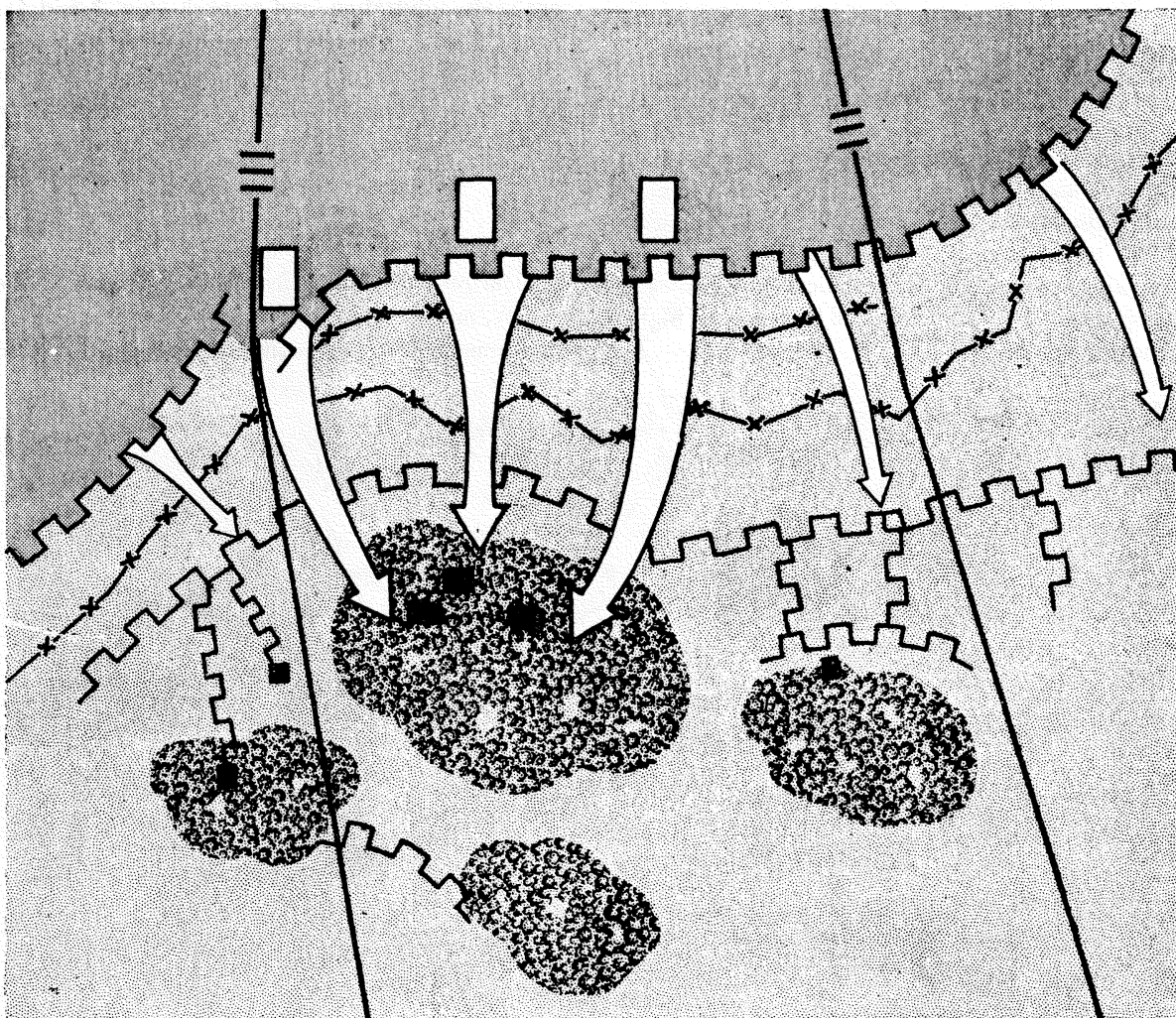


Figure 5. Plan of reconnaissance in force.

actual operation by both the reconnaissance and the supporting units. Reconnaissance in force must be undertaken only if other methods do not produce the required results. In addition, the terrain must be favorable for surprise, and sufficient time must be allowed for thorough preparation and rehearsal. Success depends on surprise and originality of action rather than on the number of troops employed (figs. 5 and 6).

location, sector of responsibility, and field of vision of each observation post is prepared jointly by the Intelligence and Operations Staffs. Each observation post is required to keep a journal and to submit an observation report (fig. 7).

At night and when the terrain and weather interfere with effective observation, observation reconnaissance is augmented by listening reconnaissance. Listening posts are selected as carefully as the obser-

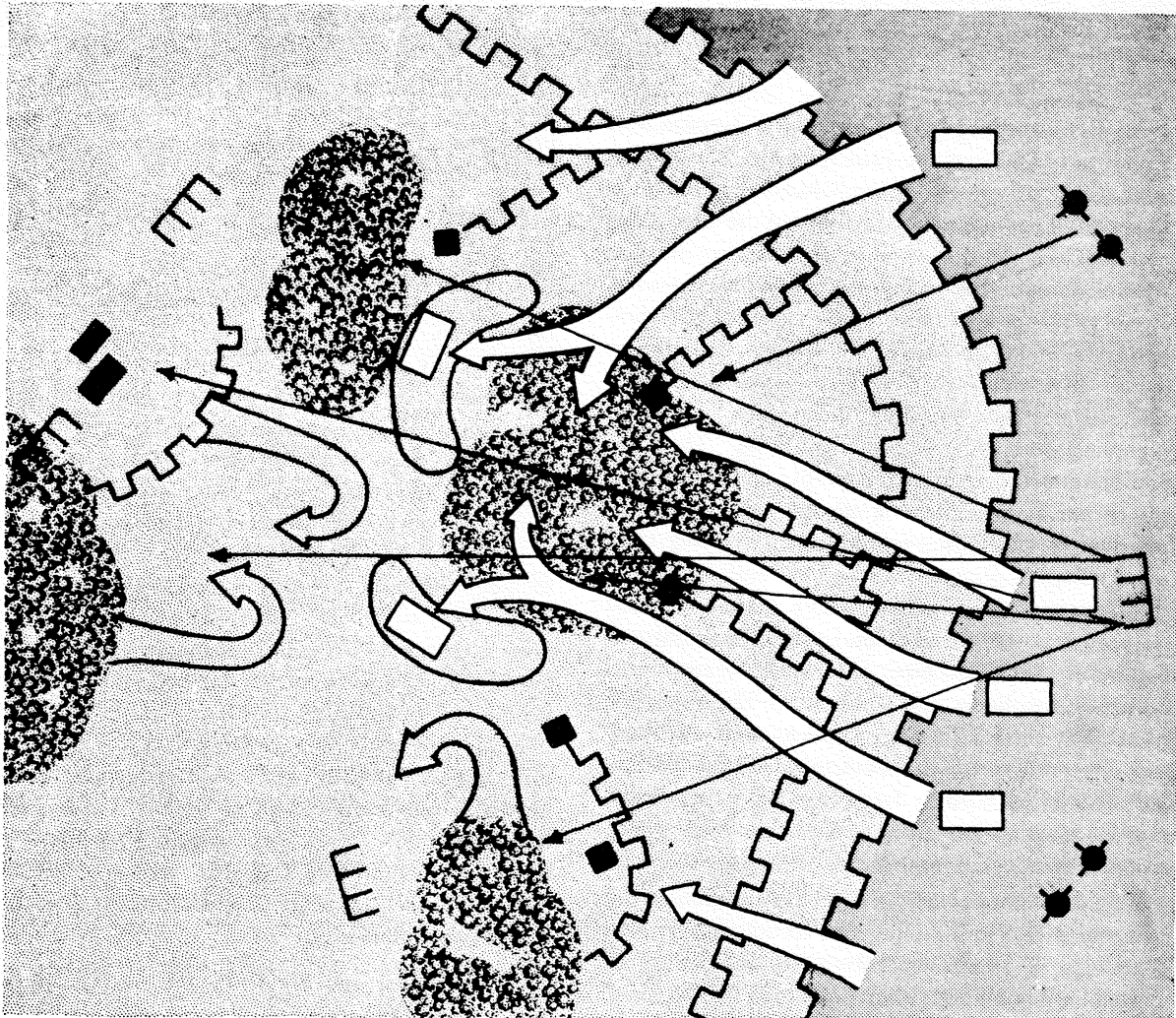


Figure 6. Execution of reconnaissance in force.

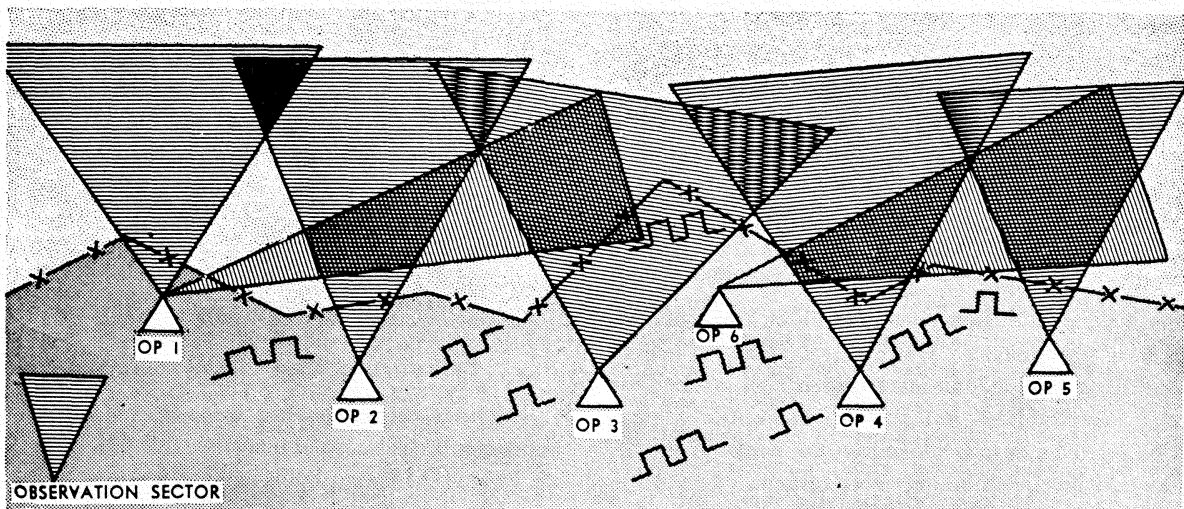


Figure 7. Observation plan.

vation posts. They are manned by trained personnel who are required to keep a journal and to submit a report at the end of their tour.

b. Reconnaissance by specialized arms and services. The general principles of infantry reconnaissance discussed above hold true for the intelligence and reconnaissance activity of the other arms and services. However, each arm and service has special forms and techniques of reconnaissance. Reconnaissance is initiated by the chiefs of branches, and coordinated and controlled by their intelligence staffs. Reconnaissance units of specialized arms and services operate either independently or with reconnaissance units of combined arms. Their objectives are to determine the quality and strength of the technical forces of the enemy, and the factors which may affect the employment of friendly technical troops.

ARTILLERY RECONNAISSANCE. Artillery reconnaissance is an integral and specialized part of combined reconnaissance. It demands exceptional accuracy, timeliness, and continuity. The objectives of artillery reconnaissance are the location and analysis of targets, evaluation of terrain, and the location and activity of friendly front lines. Artillery intelligence agencies are grouped into three categories: **troop, instrumental, and air.**

Troop reconnaissance is a primary responsibility of commanders and intelligence sections of artillery regiments, groupments, battalions, and batteries. Paired battalion observation posts are fully equipped with accurate optical instruments. When equipment is available, artillery observation posts augment their orientation and panoramic sketches with panoramic photographs. In addition to observation, artillery employs scouting parties which infiltrate behind enemy lines to observe targets and control fire.

Instrumental reconnaissance is conducted by a group of small, highly specialized units equipped with accurate optical, photographic, sound-ranging, meteorological, and other instruments. Sound-ranging batteries, normally operating in pairs, may be employed either in support of large artillery formations, or attached to counterbattery or counter-mortar groupments. One battery, deployed behind the firing line, reconnoiters targets such as medium and heavy mortars, and infantry and antitank guns. The other battery, deployed on the flanks of the firing positions, reconnoiters deep targets. The photogrammetric battery, attached to army and higher echelon artillery staffs, develops and interprets

aerial photographs and coordinates them with ground survey data. It controls friendly camouflage through photographic interpretation; takes, develops, and interprets ground photographs; and prepares and disseminates map substitutes. At least one artillery meteorological post is attached to each artillery regiment, groupment, separate battalion, and sound-ranging post. It provides the firing battalions and sound-ranging posts with current, local meteorological data by ground measurements and radiosonde.

Red Army artillery air reconnaissance closely approximates standard U. S. practice. Both artillery and combat aircraft are used. Outstanding emphasis is placed on comprehensive briefing of flying personnel, including visits to key ground observation posts, and on extensive use of air liaison officers.

ENGINEER RECONNAISSANCE. Staff procedure in the planning and conduct of engineer reconnaissance is the same as that for reconnaissance of combined arms except that the regimental engineer, rather than a staff officer, is personally responsible for the establishment of observation posts.

Engineer reconnaissance has a two-fold purpose: to reconnoiter terrain with a view to facilitating the movement and employment of friendly troops; and to determine the location and nature of enemy engineer construction, with a view to disclosing his system of defense. Specific objectives of the first task include the following:

- Quantity and condition of local resources available for use by engineers.
- Condition and capacity of roads and bridges.
- Supply of drinking water.
- Type of soil.
- Possible location of observation posts, defensive constructions, and means for camouflage.

Specific objectives of the second task include:

- The location, type, and camouflage of enemy defensive installation.
- Demolitions, antipersonnel, and antitank obstacles and minefields.
- Nature of engineer construction in progress.
- Safe avenues of approach to enemy positions.

Engineer reconnaissance is conducted by reconnaissance patrols, by observation, by interpretation of ground and air photographs, by study of topographic, geological, and hydrographic maps, and by interrogation of prisoners.

ARMORED AND MOTORIZED RECONNAISSANCE. In all armored and motorized units it is mandatory that command reconnaissance be made of all areas in which armor may be employed; also, a group of engineers must accompany each armored patrol. Because the employment of armored and motorized units is affected by terrain, especially in winter, the attention of intelligence staffs and reconnaissance units is concentrated on terrain, soil, roads, and bridges which are likely to be used during approach, deployment, and battle. In this connection, friendly as well as enemy minefields and antitank obstacles receive special attention. During the course of battle, or on the march, mobile observation posts are established with radio communications to the command post. Communications between the command posts and armored reconnaissance patrols are almost exclusively by radio. In preparation for a breakthrough of a fortified position, foot reconnaissance patrols of armored units operate independently or as parts of combined reconnaissance.

SIGNAL INTELLIGENCE. Signal intelligence is charged with gathering information about the enemy and about existing military or civil signal communications in the region of prospective operations. Signal headquarters of armies and higher echelons are provided with technical means for collecting signal intelligence of the enemy, including radio-intercept and radio-direction-finding units. In static situations, lower echelons monitor enemy radio nets, and signal patrols endeavor to tap enemy wire nets.

Utilization of local signal equipment is considered in every signal plan, and it is the responsibility of the intelligence section of the signal staff to organize reconnaissance of existing facilities for signal communications. Specific objectives of this type of reconnaissance are centers of communications, telephone and telegraph lines, and other equipment. Estimates are made of equipment and time needed to make it usable; extent of demolitions and sabotage are determined; and measures are formulated to protect signal equipment from enemy agents and the local population. In connection with signal liaison service, signal reconnaissance investigates the condition of existing landing strips and possible sites for new ones.

AIR RECONNAISSANCE. The two principal functions of air reconnaissance are aerial photography and observation. Air observation is carried out by special observation planes and by combat planes. It is organized by the air arm commander either inde-

pendently or at the request of ground units. Observation missions are often coupled with photographic missions. Communications are established so that radio messages from air observers are received simultaneously by the air intelligence staff, the air-drome of the observation squadron, and headquarters of all supported formations down to and including corps. Some of the objectives of air observation include:

- Areas where the enemy is retreating.
- Directions of enemy attack or withdrawal.
- Phase lines reached by friendly troops.
- Signs of regrouping of the enemy in his rear areas.
- Control of friendly camouflage.

The work of air photoreconnaissance is closely integrated with photo-interpretation and topographic services. Results of photoreconnaissance are interpreted and entered on topographic maps at the headquarters of each reconnaissance squadron. This information is then sent to the topographic service of the army group, where it is evaluated and reproduced on maps and map substitutes for the use of ground formations and units. Special overlays containing a specific type of information—such as enemy defenses, artillery positions, or command posts—are prepared for the use of the general and special staffs. Ground photo-panoramas are supplemented with vertical and oblique stereopairs. Artillery units are given special distribution which, in major operations, includes firing battalions.

SPECIAL SERVICE RECONNAISSANCE. In addition to the reconnaissance agencies of the arms and services, the Red Army employs several specialized services which perform reconnaissance tasks beyond the scope of technical units of combat troops. The reconnaissance parties of these special services check existing topographical, hydrographical, geological, meteorological, and soil survey data with actual conditions; and prepare, reproduce, and disseminate the resulting intelligence by means of standard and special maps, studies, and surveys. For example, the photogrammetric service develops and interprets aerial photographs and coordinates them with ground survey data. The military topographic service prepares, reproduces, and disseminates standard and special maps such as tank, mortar, visibility, river-crossing, and mountain march maps. The hydro-meteorological service prepares hydrographic maps and long-range weather forecasts. The geological service makes soil surveys.

4. EXPLOITATION OF CAPTURED PERSONNEL AND MATERIEL

a. Prisoners of war. In Soviet reconnaissance, the capture of prisoners plays such a prominent part that commanders often specify in their reconnaissance directives the sectors from which prisoners are to be taken. Detailed instructions for processing prisoners are found in all handbooks issued to the various arms and services.

Standard operating procedure for handling prisoners of war is as follows: Prisoners are grouped according to their unit, officers being separated from enlisted men. Prisoners are conducted as soon as possible to the next higher headquarters, where each prisoner is interrogated alone; each echelon limits interrogations to subjects of immediate interest. Results of each interrogation are entered on a special form which accompanies each prisoner, and results of interrogations are forwarded to the next higher headquarters regardless of the final destination of the prisoners. Whenever possible, the interrogating officer is of the same arm or service as the prisoner; in regimental and higher echelons, prisoners of a particular arm or service are questioned by the chief of the intelligence section of the corresponding arm or service.

b. Captured documents. All Red Army reconnaissance personnel are impressed with the importance of documents found in areas occupied or recently vacated by the enemy. Document exploitation in the lower echelons follows the same procedure as that applied to the interrogation of prisoners. Each headquarters extracts applicable information immediately and then forwards the documents to the next higher echelon. At the army level and higher, thorough classification and study of the documents are made by a special staff of the Information Section of the Intelligence Staff.

c. Captured matériel. Captured enemy arms and equipment are collected by the headquarters section of the formation or by a special detail appointed by the Commander. The collected matériel is studied by the technical intelligence sections of the army and higher echelons. Primary tests, such as armor penetration, are undertaken in the forward

area by locally available technical officers. All personnel are taught to report the performance and employment of new enemy weapons and equipment.

d. Reports. Reports from intelligence agencies are collected through the intelligence channels, but intelligence is generally disseminated through the operations sections of the various staffs.

Reconnaissance reports are submitted by each reconnaissance unit, and must indicate the following:

- Addressee (surname of the Commander only), location of the reconnaissance unit, and time of the message.
- Information on the strength, location, and activities of the enemy.
- Information on the terrain.
- Other pertinent information such as casualties and prisoners.
- Future action of the patrol, number of the message, and signature.

Observation reports are submitted by the commander of each observation post. They include the number of the post; names of the observers; and the time, date, azimuth, and range of each significant item observed. Reports may be given as a summary, as a plane or panoramic sketch, or as a combination of the two (figs. 8 and 9).

Intelligence summaries may be periodic or special. They are authenticated by the Intelligence Officer and by the Chief of Staff, and disseminated to the higher, subordinate, and neighboring headquarters. Intelligence summaries must include the following:

- General nature of enemy activities.
- Disposition of the enemy from right to left, accompanied by sources and time of the information.
- Enemy air activity.
- Information on the enemy rear areas as disclosed by air reconnaissance, prisoner-of-war statements, and other reports.
- Conclusions as to the significance of the enemy's actions.
- A list of items of information which should be verified or clarified, and the means by which this could be accomplished.

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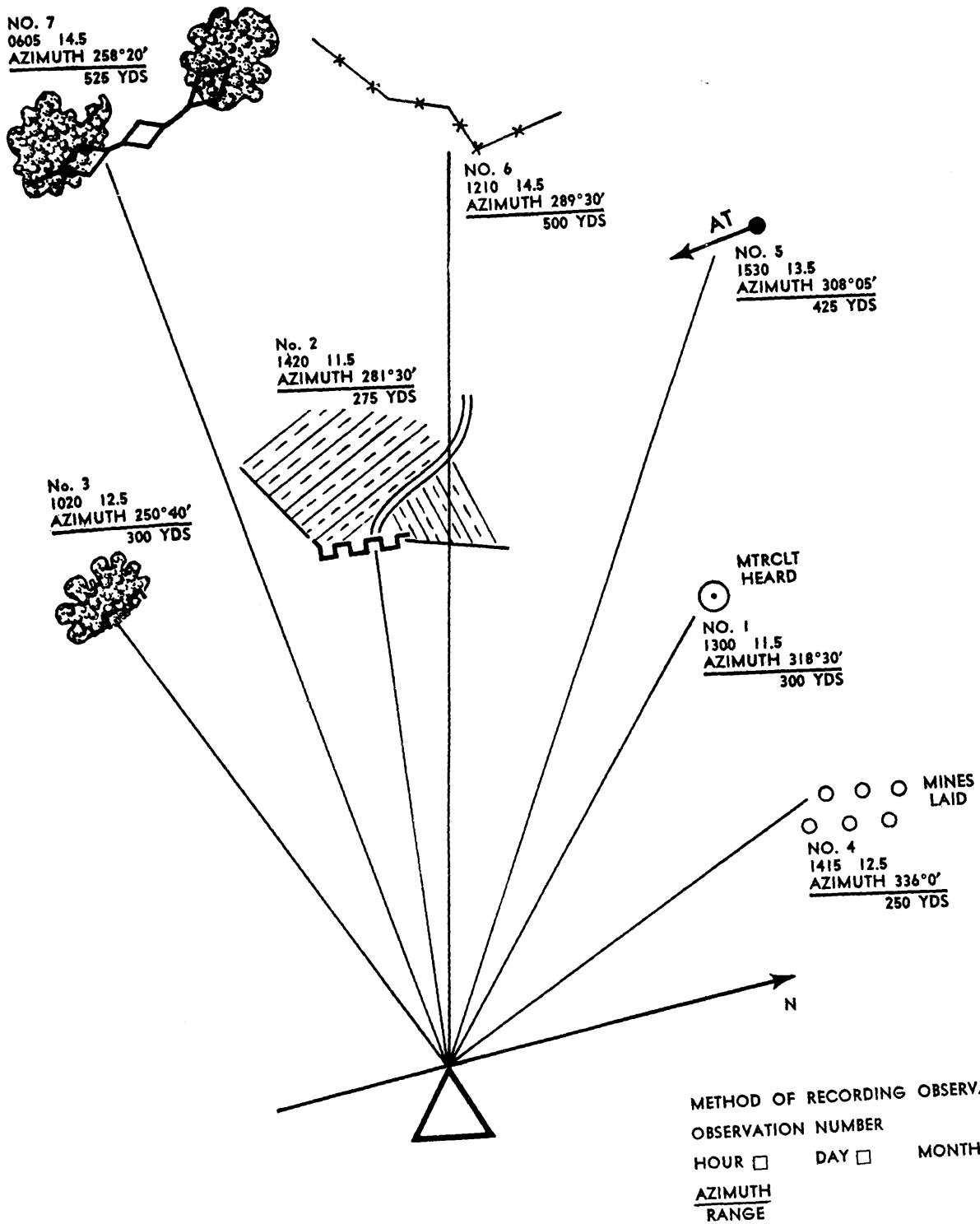


Figure 8. Observation report.

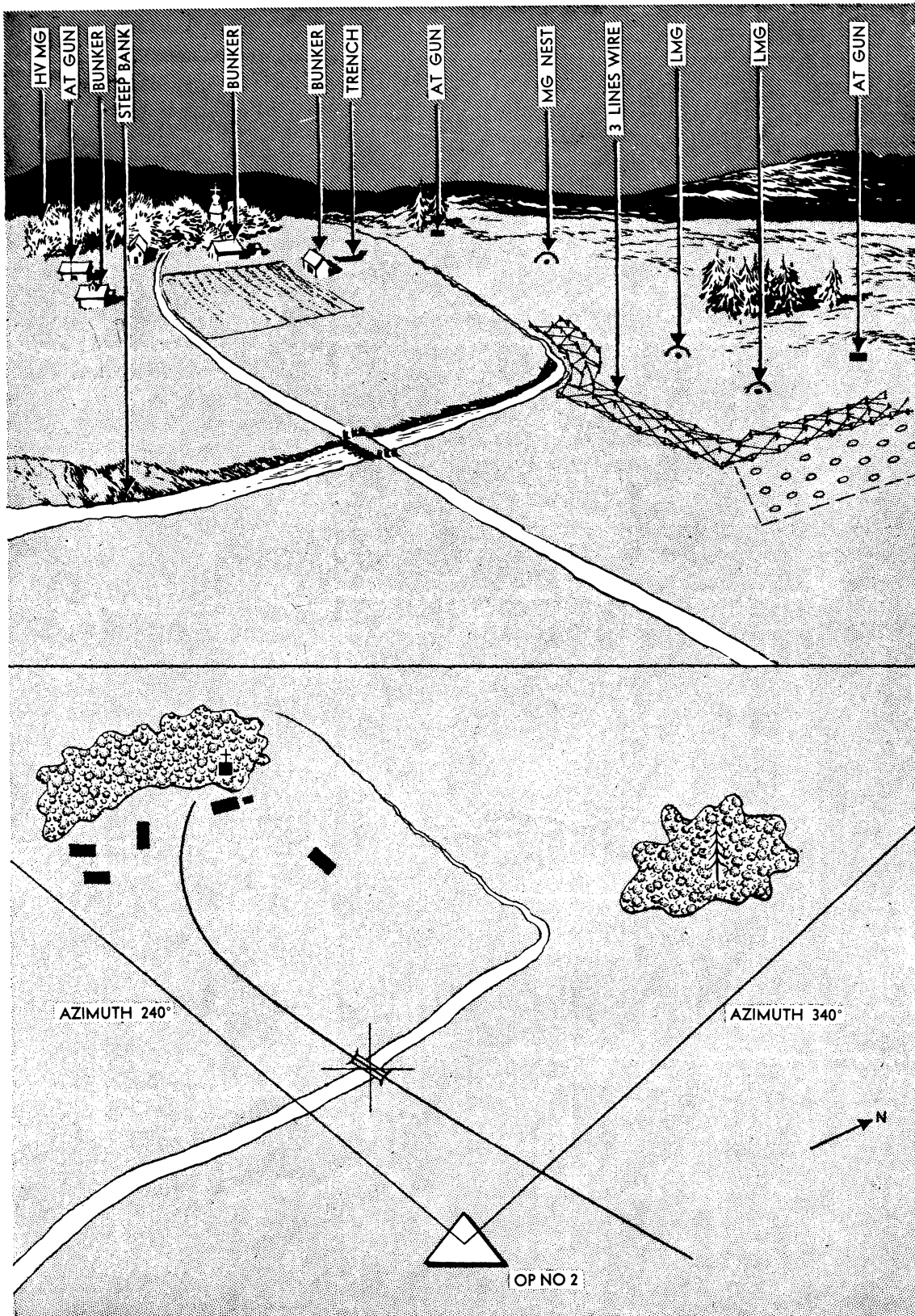


Figure 9. Observation report combined with panoramic sketch.

Section III. BASIC TYPES OF TACTICAL PLANS

In Soviet practice, the forms of maneuver and organization of operations consistently follow a limited number of basic patterns: the infantry offensive, the tank and mechanized offensive, the meeting engagement, the pursuit, the centralized and decentralized defense, the mobile defense of mechanized forces, the withdrawal, and the disengagement from encirclement.

1. THE INFANTRY OFFENSIVE

The Soviet infantry offensive is made by infantry supported by artillery, tanks, engineers, and aviation as the situation demands. It is generally in the form of simultaneous attacks on a broad front with concentrations of artillery and, particularly, tanks in the break-through area. The attack seeks to penetrate the enemy defenses in two or more sectors and converge on a limited objective; its mission is to encircle or envelop enemy groupings and destroy them by simultaneous attacks from all directions. This scheme of maneuver is fundamental for the offensive operations of units of every size from the platoon to the army group.

A typical plan of attack (fig. 10) is formulated in the following manner:

Mission: To destroy enemy forces which are guarding the approaches to communication center X.

Forces available: Nth Infantry Division.

Enemy forces: Two infantry regiments and two artillery regiments.

Plan of maneuver: 1st Regiment to advance to Objective A through breach made by the neighboring division. 2d Regiment, using the same breach, to advance to Objective B, leaving one battalion to deal with points of resistance C and D. 1st Battalion, 3d Regiment to penetrate enemy defenses and join 2d Regiment at Objective C. Provide flank security for 2d Regiment. 3d Battalion, 3d Regiment to penetrate enemy defenses and join 2d Regiment at Objective E. 2d Battalion, 3d Regiment to penetrate enemy defenses and join 1st Regiment at Objective A.

Soviet offensive theory stresses the importance of combined or coordinated operations. Supporting arms are usually under the senior commander of that arm until such time as the predetermined phase

in the combat plan directs subordination of the supporting arms directly under the command of the supported unit. Coordinated attacks are planned and rehearsed with the utmost care, and great attention is given to the smallest details. Daring and initiative on the part of smaller unit commanders is imperative.

In the offensive, a given situation may call for certain types of specially trained troops. In cases where columns of tanks make an assault of a fortified position, special detachments of combat engineers, thoroughly trained for their particular assignment, may be used to facilitate the assault or may even be assigned a combat mission such as seizing and securing bridges and water crossings.

Soviet tactical practice prescribes the use of line, wedge, inverted wedge, or echeloned arrangement of forces in the attack. Except for special operations, such as assault of a fortified position, columns will not be used. Normally, in preparation for a penetration, attacking forces are placed well forward, while mobile units used for the purpose of exploitation of a penetration are brought up from the rear.

To utilize maximum shock power, the Red Army normally limits the uncommitted reserves to one-ninth of the infantry combat strength. On difficult terrain this may be increased up to one-sixth.

Offensive operations are accomplished in five distinct phases:

a. Concentration of forces. This phase is characterized by intensive reconnaissance and observation, secret concentration and regroupment, elaborate rehearsals, and deception. Detailed reconnaissance is conducted by units which are already in line, and is combined with command reconnaissance by units designated for the break-through. In the final stages of preparation, reconnaissance in force is conducted in several sectors. At times, reconnaissance is staged to resemble a major offensive in order to deceive the enemy as to the real direction of attack and to throw him off balance.

Concentration and regroupment of forces is accomplished with great secrecy. Elaborate precautions are taken to prepare in advance camouflaged dispersal areas for troops, especially armor and artillery. Units are grouped according to the tactical plan, and further subdivided into teams, one team for each objective. These teams stage day and night rehearsals over ground which has been specially prepared to resemble that of the contemplated breakthrough. Artillery fire is rigidly controlled and is limited to the minimum consistent with antiaircraft

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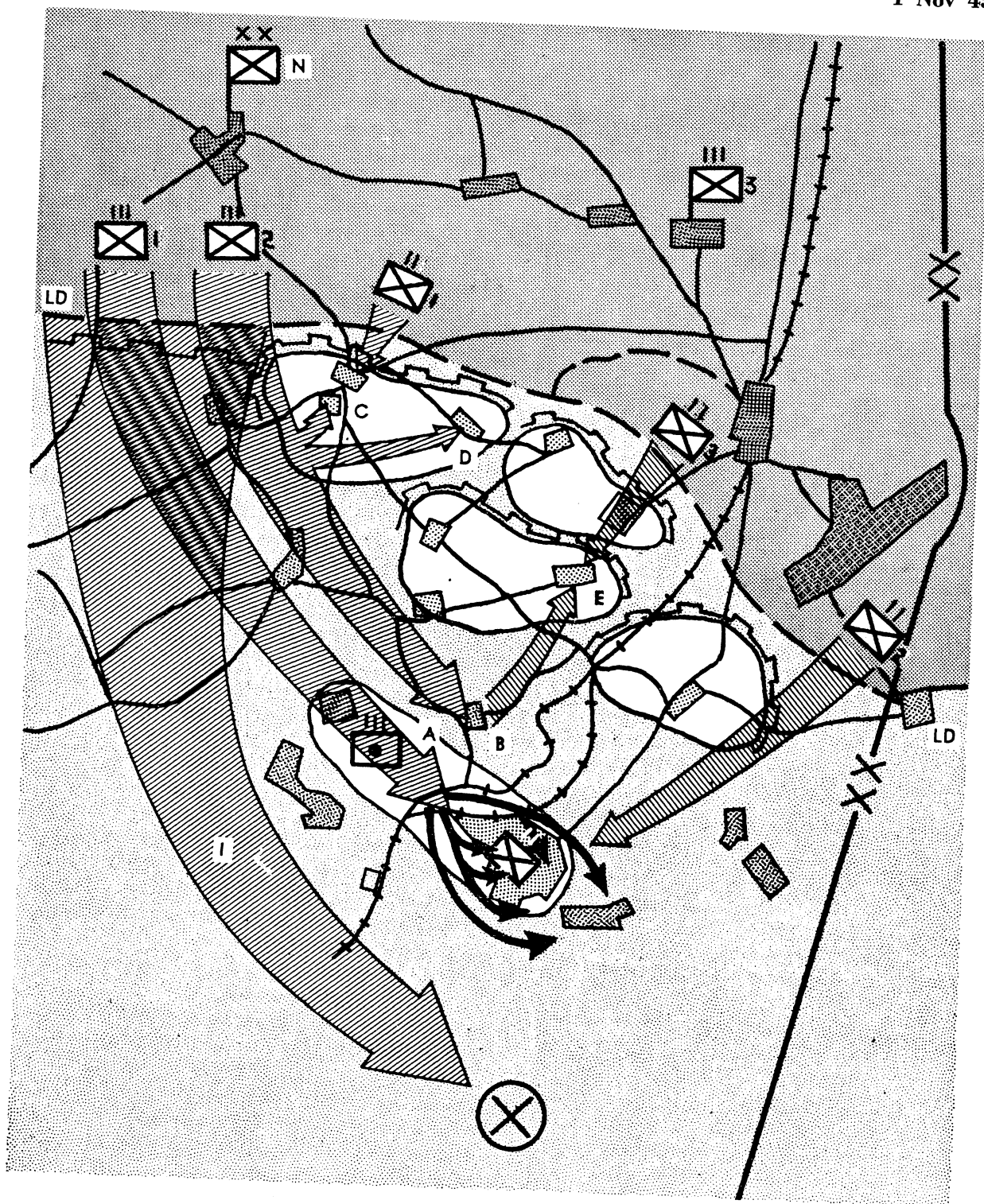


Figure 10. The coordinated attack—Soviet tactical concept.

and counterbattery defense requirements. Fire is conducted only by duty and roving batteries.

Meanwhile staffs, often augmented by special teams from General Headquarters (*Stavka Glavnogo*

Komanduishchego), prepare field orders, artillery fire plans, tables of combat coordination, and other necessary papers. If the Commander judges that the troops and staffs are not sufficiently well prepared

for the operation, he prescribes a special training schedule which may extend over the preparatory period. Soviet preparation for an assault of prepared positions is deliberate, extending from several days to 6 or 10 weeks depending on the caliber of enemy resistance and the state of preparedness of the assault troops.

b. Fire preparation. In the second phase, the air forces seek to isolate the enemy by destroying his communication lines. Artillery undertakes the destruction of located fire positions. Finally, every available weapon, centralized under one command, concentrates a brief but extremely violent barrage immediately preceding the assault.

c. The assault. In the assault phase of the break-through or penetration, artillery is allotted to the various assault teams for direct support. Movement of units and fire of supporting arms are controlled on the initiative of local commanders. Artillery must observe the movement of supported units, executing firing missions on the request of assault team commanders or according to tables of combat coordination.

In order to maintain continuous control, the overall commander must observe the movement of units, especially in the decisive direction. Command liaison officers are delegated to supervise the execution of the assault in secondary directions and to transmit changes in combat plans which necessitate changes in tables of combat coordination.

d. Securing the offensive. After the objective in the enemy's rear has been reached, the attacking units consolidate their positions, secure their flanks against counterattacks, and prepare for the exploitation of the penetration. For example, in an attack made by tanks, combat engineers are used for the special purpose of protecting the tanks from counterattack by throwing out contact and controlled mines at the moment the assault is stalled or otherwise stopped for consolidation or regrouping. After regrouping or repelling a counterattack, the tanks continue the attack, passing over the areas covered by controlled mines. The mines are picked up and the operation is repeated at the next forward limit of the advance.

e. Exploitation. Mobile formations pass through the gap in parallel columns, pursuing the enemy. Motorized light artillery, engineers, and infantry from the assault units are attached to them as needed and available. The remaining infantry

units attack encircled enemy forces, continuing also to provide flank security. Air and artillery units reinforce the fire of self-propelled and mobile artillery on call from mobile formations striking in the enemy rear. On call from the infantry, they destroy encircled enemy remnants. Calculated risks are taken to secure bridgeheads and commanding terrain and to prevent the enemy from organizing a defense on intermediate positions.

2. THE TANK OFFENSIVE

A frontal attack by tank forces, normally a tank corps, differs from the coordinated assault of infantry with supporting arms. Tanks attack in deeply echeloned formation on a narrow sector, using their fire and shock power to achieve penetration. Resistance is by-passed in order to avoid full deployment and protracted local combat. Infantry and artillery mop up enemy strong points and provide flank security for the tank unit against enemy counterattack. The tank forces are assigned specific terrain objectives in the enemy rear rather than mission-type orders.

The tank forces themselves cannot hold territory, but must rely upon the following infantry and, sometimes, cavalry. Tank units destroy enemy rear installations and supply lines, and attempt to encircle and destroy the enemy by coordinating their penetration with adjacent units in a wide turning maneuver or by a double envelopment by two converging tank penetrations (fig. 11).

3. MEETING ENGAGEMENT

In general, Soviet and U. S. doctrines as to meeting engagements are virtually identical (fig. 12). Specifically, however, certain differences may be noted. According to Soviet doctrine, speed of maneuver, seizure of favorable terrain, and quick deployment of main forces and artillery upon contact are essential. Aggressive reconnaissance, ground and air, is continual throughout the operation. Usually, a strong advance guard is utilized. An attack upon the flank is sought. The fullest use of artillery at the earliest possible moment is made. The advance guard uses its organic artillery support to stall the forward movement of the enemy in order to enable the artillery of the main forces to be brought to bear on enemy firing positions. In one case in an operation northwest of Orel, artillery was brought into direct fire action from the march.

Soviet doctrine states that *the speed of deployment by artillery units decides the outcome of the battle.*

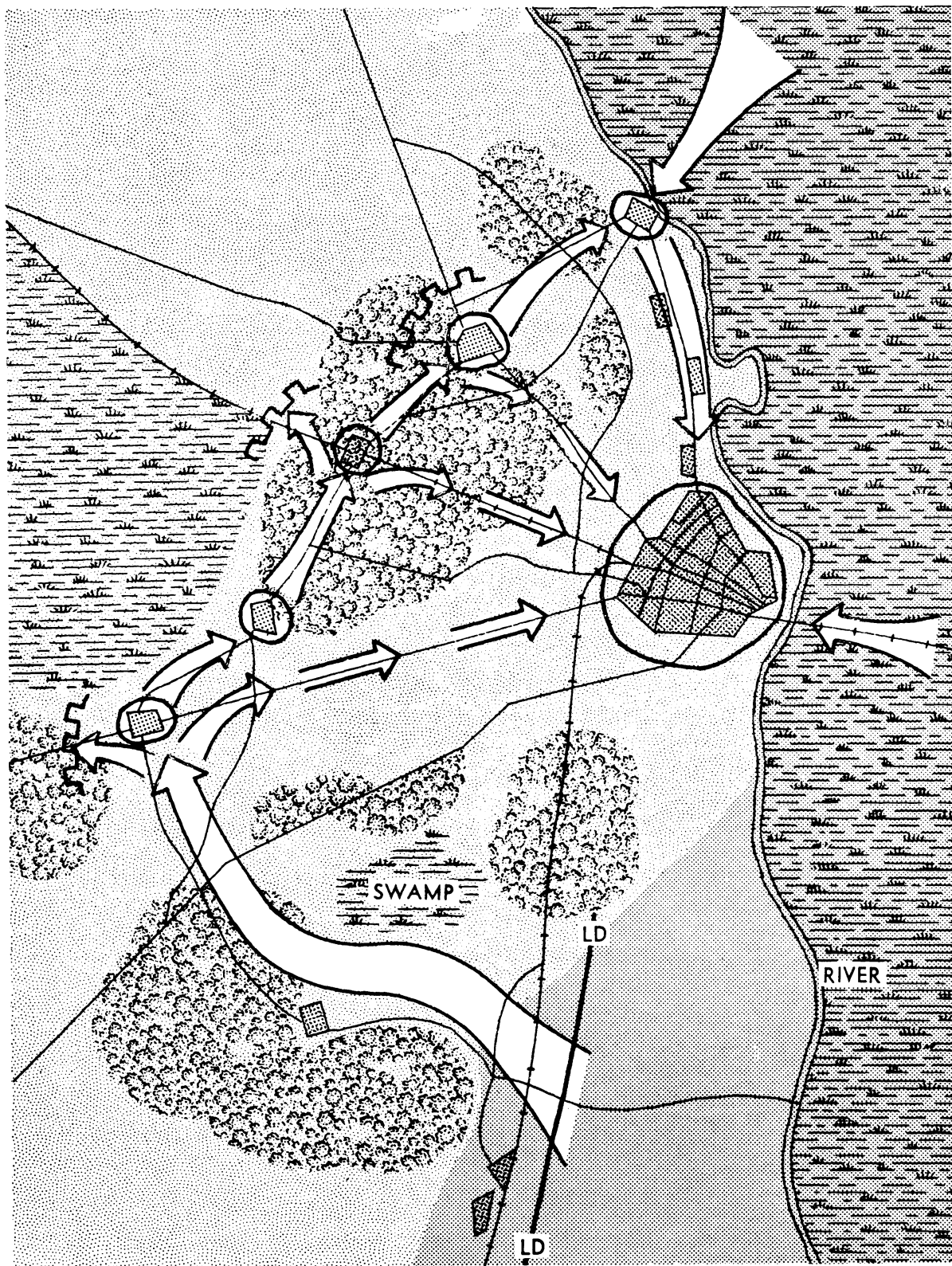


Figure 11. Bobruisk encirclement by large tank unit.

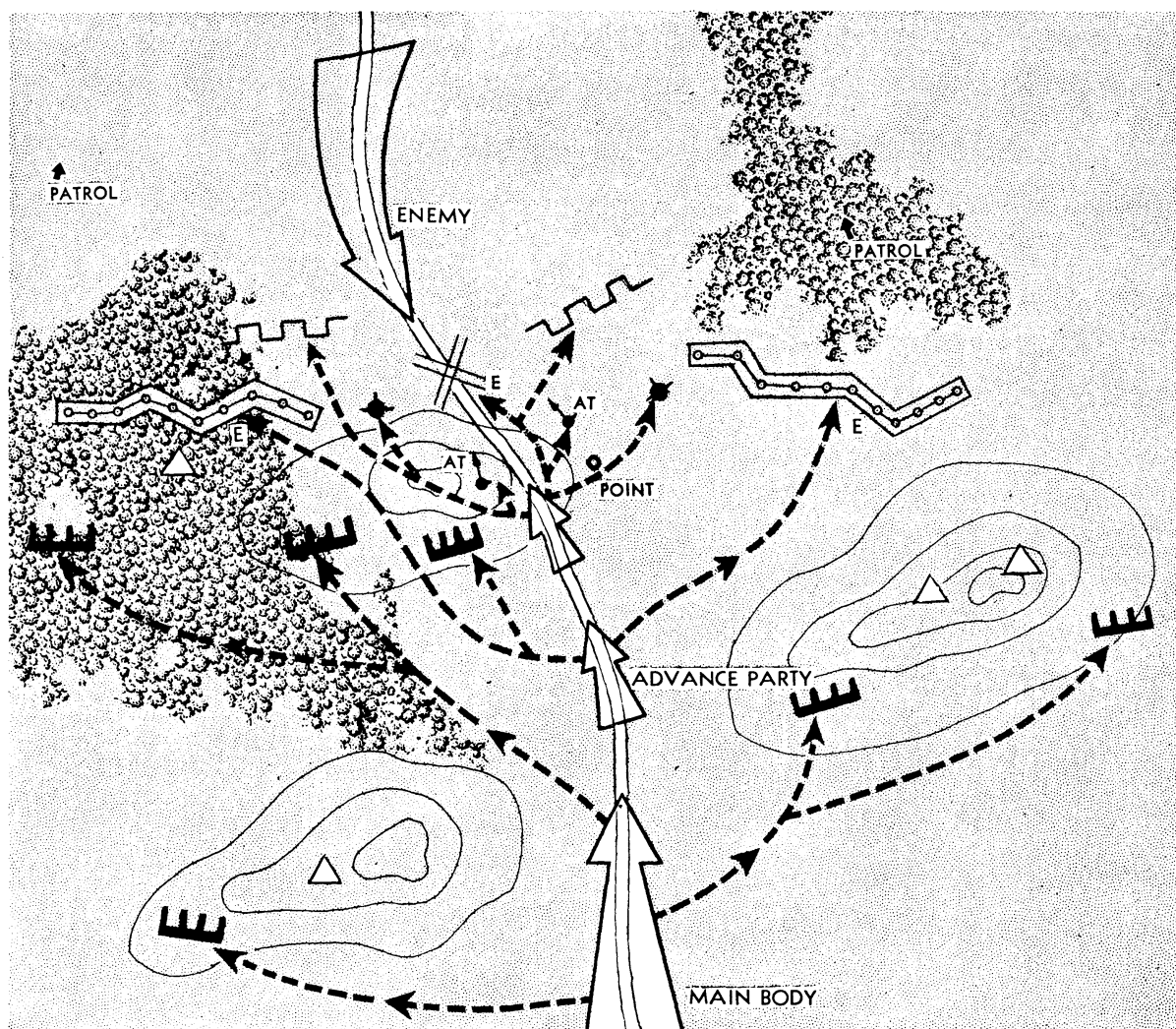


Figure 12. Meeting engagement, showing scheme of deployment of the point, advance party, and main body when contact with enemy occurs.

4. PURSUIT

The Red Army, as a general rule, pursues the enemy in a double parallel column, usually by mechanized units closely followed by infantry. Great care must be taken by the Commander in organizing for the pursuit; his planning should be detailed, but speed in this is essential.

A typical pursuit plan (fig. 13) includes the following elements:

Mission: To destroy retreating groups and advancing reinforcements of the enemy, and to leave small groups to block avenues of escape of by-passed enemy garrisons.

Forces available: Two tank brigades and one motorized brigade with supporting units.

Enemy forces: Advancing reinforcements, retreating groups, and by-passed garrisons.

Plan of maneuver: Group to advance in two parallel columns, a tank and a motorized brigade on the right, and a tank brigade on the left. Right column to exploit the break-through along the road T-R, to envelop S from south and southwest, to block advance of reinforcements from the north. Left column to exploit the break-through along the road I-L-S, to assist in the capture of S. The group to continue the advance to O.

The Soviets seek decisive combat with the main retreating forces, avoiding direct contact with enemy rear guards or other special units charged with the mission of slowing down the pursuit. When strong-

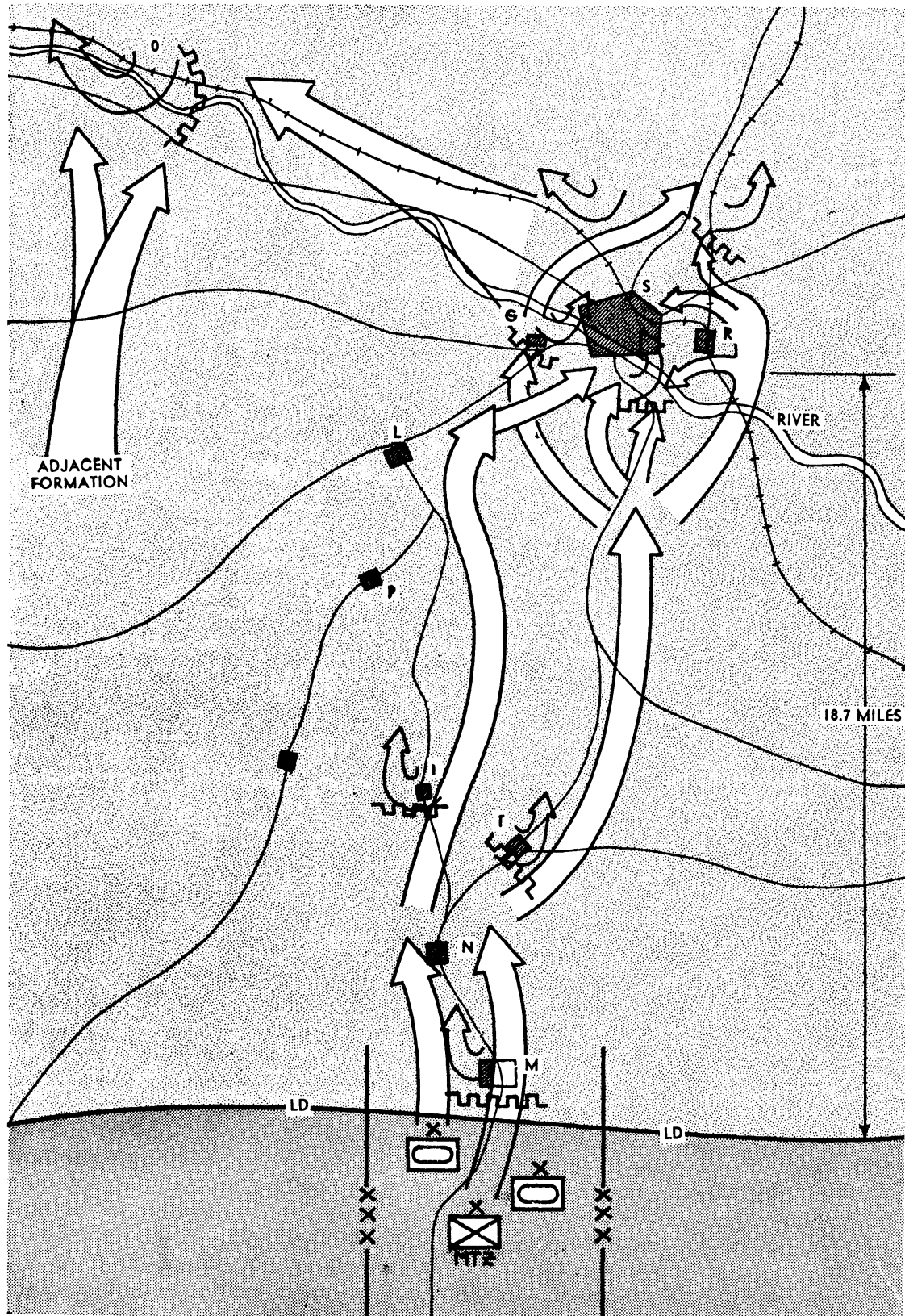


Figure 13. Pursuit.

points are found to be impeding forward progress of the pursuing forces, these points are by-passed and detachments of assault troops are assigned to surround and to destroy them.

Extensive use is made of engineers to facilitate the forward movement of the pursuing forces. Engineers clear enemy mines and other obstacles from the avenues of approach and mobilize the local popu-

lery, and anti-aircraft—so as to be able to withstand, absorb, or shatter mass attacks by enemy infantry supported by tanks, artillery, and aviation.

The use of reserves in the Soviet defense varies, depending on the type of defense, terrain, and objective. Usually the Soviets concentrate the overwhelming bulk of a unit's strength on the main line of resistance. The reserve is limited to approxi-

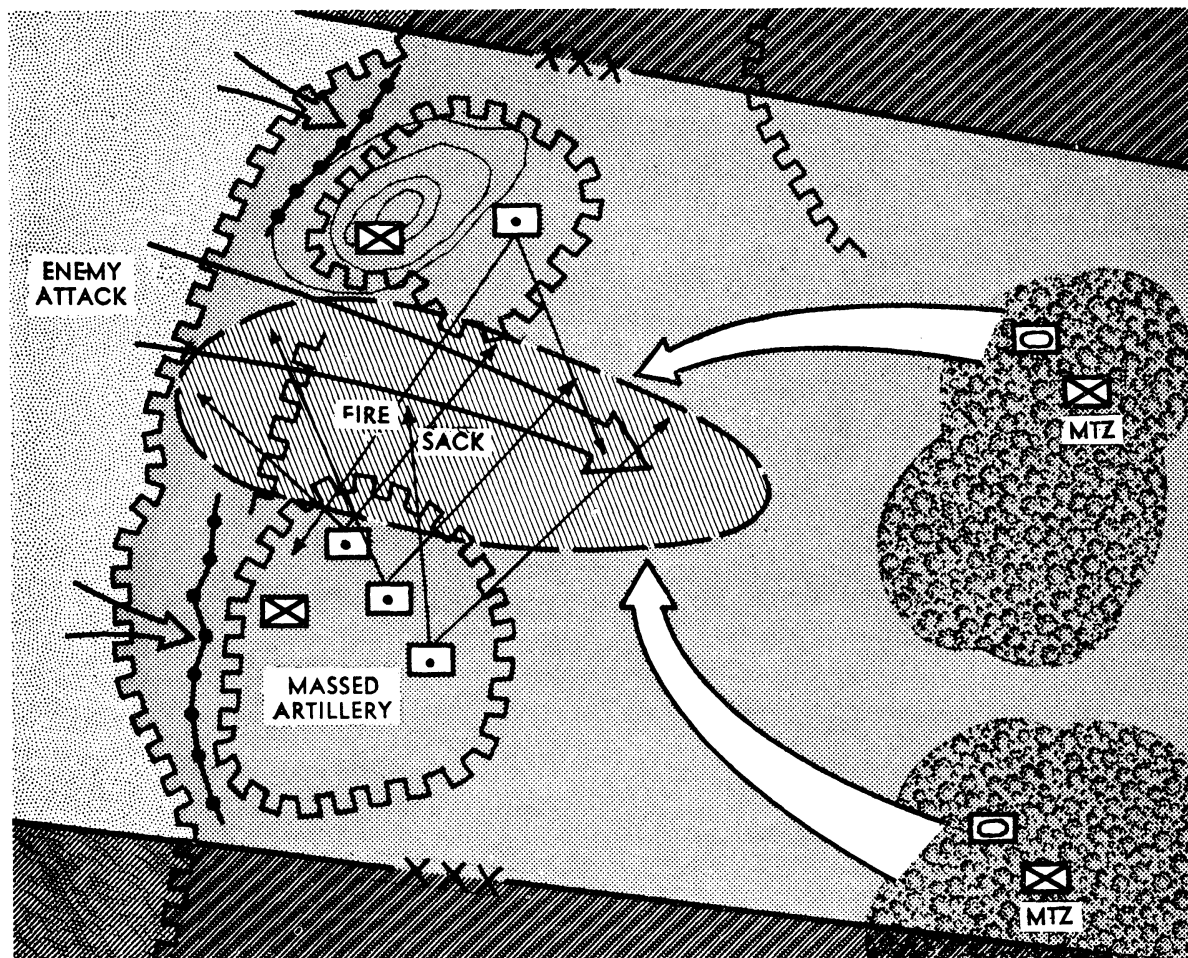


Figure 14. Centralized defense for destroying the attacking enemy, using massed artillery and counterattacks.

lation for constructing and rebuilding roads and bridges.

5. DEFENSE

The strength of Red Army defensive tactics lies in the determination of the troops, coordination of all types of fire with all systems of antitank and anti-personnel fortifications and obstacles, skillful organization of the ground, and decisive counterattacks.

The defense should be deep—antitank, antiartil-

lery, and anti-aircraft—so as to be able to withstand, absorb, or shatter mass attacks by enemy infantry supported by tanks, artillery, and aviation. In certain situations, however, when decisive results can be gained, an extremely large mobile reserve is maintained. A tank corps, for instance, may act as a reserve for an infantry division. Such a tank unit is kept concealed well in the rear, with careful preparation made to facilitate its rapid commitment on the flank of the attacking force.

Depending on the situation, the Commander's objective, and available forces, the defense may be either centralized or decentralized.

a. Centralized defense. The centralized type of defense seeks, by employing obstacles or by maneuver, to channelize the enemy attack in a given direction in order to gain a more favorable position for a decisive counterattack with heavily armored units and concentrations of massed artillery (fig. 14). Dummy positions and false fortifications are

takes position for close all-around protection. Favorable terrain is sought for the development and fortification of strongpoints and islands of resistance. Each unit uses its assigned artillery and other organic weapons for its own protection. In decentralized defense, strongpoints and islands of resistance frequently will be surrounded or cut off from

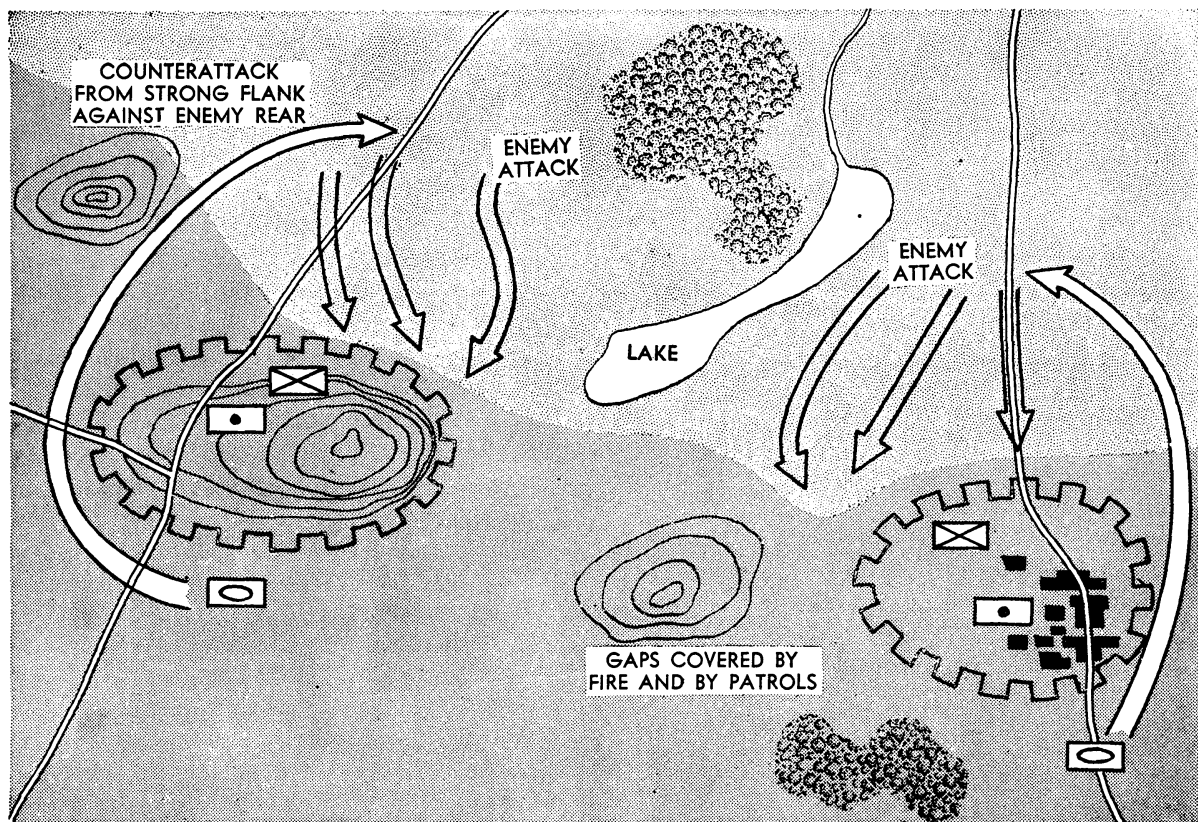


Figure 15. Decentralized defense for denying terrain to superior enemy forces by strongpoints with close-in, all-around defense.

used extensively. A favorite Soviet maneuver is to allow the enemy to penetrate deeply into the lines and trap him in a firesack. The counterattack takes the form of a large-scale ambush on the deep flank, the counterattacking units being supported by massed, registered artillery. The counterattack is under the direct control of the over-all troop commander. The mission of this type of defense is destruction of the enemy.

b. Decentralized defense. The objectives of decentralized defense are to deny the enemy use of terrain, to divide his attacking forces, and to destroy him by numerous local counterattacks on the initiative of the local ground commander (fig. 15). In this type of defense each unit down to the smallest

other friendly troops. Only on specific orders from the senior troop commander is the position abandoned. This particular type of defense is especially effective against tanks and mechanized units.

c. Defense by cavalry and mechanized forces. Mobile forces may assume either decentralized or centralized defensive positions. But, in order to retain the advantages of their mobility, they usually adopt more elastic tactics, particularly in terrain affording good concealment.

Avenues of approach are covered frontally by artillery and infantry (dismounted cavalry) road blocks. Other small groups, usually including self-propelled tank destroyers, prepare flanking positions to ambush enemy mechanized units. Finally, a pow-

erful mobile reserve is held out with the mission of counterattacking the deep flank or rear of the forces stopped by the road block.

In general, this type of defense seeks to trap and destroy advancing enemy columns successively. In the face of a coordinated attack which threatens to destroy the road block and expose the rear of the mobile reserve, a withdrawal is executed to the next favorable position.

6. WITHDRAWALS

Retrograde movements are not heavily stressed in Red Army tactics; regulations state that a disengagement will be undertaken only on direct order from higher authority. The techniques of retrograde movement employed in day and night operations are virtually identical with those of the U. S. Army.

7. DISENGAGEMENT FROM ENCIRCLEMENT

In 1941 and 1942, the Red Army suffered heavy casualties due to encirclements of large units by German forces. As a result, specific procedures in disengagement from encirclement were incorporated in Red Army tactics.

When any unit is in danger of encirclement, the Commander designates troops to secure the flanks and rear, and then counterattacks in order to stall the enemy. Additional tactical measures to be taken include holding favorable terrain along the enemy approach routes, designating strong detachments with antitank weapons to threaten enemy flanks, coordinating his efforts with adjacent friendly units, closely supervising the expenditure of ammunition and other supplies, and locating and holding terrain favorable for supply by air.

When encircled, the Commander insures all-around defense, making especially sure that his forces are not under direct artillery fire. He is careful to conserve his strength, and makes sure that the hostile force does not destroy him by dividing his forces. He places the artillery at the most strategic positions, guarding approaches, vulnerable areas, and sectors of probable attacks. He insures signal communication with higher headquarters. The Soviets emphasize that even though a unit is encircled, the Commander is required to accomplish his mission. *The disengagement from encirclement is undertaken only on specific orders from higher authority.*

Disengagement from encirclement aims at the penetration of a given sector of the enemy circle

and the retirement of the unit under great pressure from a numerically superior hostile force. Periods of impaired visibility—night, fog, rain, snowstorms—are the most favorable periods for this maneuver. Prior to undertaking the operation, the Commander should determine the general situation and disposition of neighboring friendly units and partisan detachments. By aggressive use of reconnaissance he determines enemy strength and groupings. He insures great secrecy in making preparations for the disengagement. Planning must be detailed and thorough, since disengagement from encirclement is considered the most difficult of operations. The more direct the maneuver, the fewer are the casualties.

The general rules for an assault are followed in a daytime attempt to break out of encirclement. Artillery fire in preparation for the assault is exceptionally heavy. At night, however, the technique differs. The advance to the line of departure is made under the strictest secrecy. A large portion of the artillery moves in the infantry column; the chief offensive weapons are the bayonet and hand grenades. Rifle fire is used only when resistance is encountered.

Having made the penetration, the general rules covering retirement prevail. Counterattacks by rear-guard units, security against parallel pursuit, and, if possible, tank attacks at the enemy rear, are prescribed.

The Soviets recognize that disengagements from encirclement are unsuccessful in many cases. When all hope of success has been abandoned, an order may be issued by competent authority to infiltrate through the enemy lines by small units, taking care that no matériel falls into enemy hands. Surrenders en masse or by individuals, except when wounded, are expressly forbidden. Infiltration parties are instructed to join or form partisan detachments in the enemy rear.

Section IV. TACTICAL STAFF DOCUMENTS

1. GENERAL

Translation of broad command decisions into specific, coordinated troop actions requires the preparation of a large series of staff documents. In Red Army practice, such paper work is concentrated primarily in the army; it is also especially necessary for the efficient performance of the technical arms and services, such as artillery (fig. 16). In con-

NO	TITLE OF DOCUMENT	ARTILLERY GROUPMENT STAFF					DIVISIONAL ARTILLERY STAFF					ARMY (CORPS) ARTILLERY STAFF				
		COMMANDER	CHIEF OF STAFF	OPERATIONS OFFICER	INTELLIGENCE OFFICER	SIGNAL OFFICER	COMMANDER	CHIEF OF STAFF	OPERATIONS OFFICER	INTELLIGENCE OFFICER	SIGNAL OFFICER	COMMANDER	CHIEF OF STAFF	OPERATIONS OFFICER	INTELLIGENCE OFFICER	SIGNAL OFFICER
1.	ARTILLERY FIELD ORDER															
2.	FIRING TABLE															
3.	FIRE PLAN															
4.	OPERATIONAL SUMMARY															
5.	INTELLIGENCE SUMMARY AND CHART															
6.	PLAN OF ORIENTATION CHECK POINTS															
7.	SIGNAL COMMUNICATION PLAN AND ORDER															
8.	INTELLIGENCE PLAN															
9.	WORK MAP															
10.	JOURNAL															

Figure 16. Artillery staff documents.

trast, documentation in infantry and cavalry units is held to a minimum. Those arms never issue formal written orders below divisional level, but make maximum use of oral orders, overlays, and fragmentary orders.

Tactical field documents are divided into two classes: those disseminated for action or information, and those prepared for the use of the issuing headquarters only. The first class includes field orders, fragmentary and warning orders, administrative orders, summaries (intelligence, rear services, signal, operational), instructions, replies, and inquiries.

The second class includes orders and summaries of higher headquarters; general, special, and preliminary orders and directives pertaining to the work of the headquarters itself; copies of field orders and summaries of subordinate headquarters; and journals with attached documents and copies of conversations. A journal of field operations is kept separately.

2. FIELD ORDERS

U. S. Army and Soviet field orders are basically similar. The Soviet field order consists of the following:

- Disposition and activities of enemy forces.
- Missions of own unit and of adjoining units, and boundaries.
- Command decision.
- Special missions of principal subordinate units.
- Missions and attachments of arms, services, and special units which are controlled by the Commander.
- Location of the service area.
- Location and order of displacement of the command post, axis of signal communication.
- Time sequence of reports in relation to each phase of combat.

The field order is authenticated by the Chief of Staff and may be countersigned by the Commander.

Tables of combat coordination constitute the basic annexes to the Soviet field order. They contain time and space schedules for active cooperation between each arm during the various phases of combat operations; critical reference points for assembly areas and control of fire; schedules for forward displacement of artillery units; and coordination of

signal communications between the arms. For example, an offensive of an infantry division may be supported by additional artillery and tanks. The tables of combat coordination for such an operation would show which artillery and tank units would operate under centralized control and which would be attached to an infantry unit for direct support during the first and subsequent phases. The tables would indicate whether the phase lines are determined by time schedule or by terrain features, and would designate the signals to be used for the start of each phase.

The plan of coordination between artillery and aviation, one of the most important tables of combat coordination, anticipates immediate infantry requirements and includes the organization of a unified system of fire preparation, support, and security of infantry maneuver. The artillery-aviation plan is developed according to time, space, and targets by the staffs of artillery and aviation. It is signed by the Chief of Staff, Chief of Artillery, and Chief of the Air Arm, and is confirmed by the commanders of the cooperating units (fig. 17).

3. SPECIALIZED PLANS AND ORDERS

The staff of the chief of each arm prepares specific plans and field orders which are forwarded to the lower echelon of that arm, after approval by the Commander of Combined Arms.

The artillery order is based on the artillery fire plan developed under the direction of the highest artillery commander engaged in the offensive operation (army or army group). Consisting of a brief text and annexed operational documents, it includes:

- Information of the enemy.
- Missions and boundaries of neighboring units.
- Mission of the supported unit (infantry, tanks, etc.) and of cooperating units (air, engineers, etc.).
- Combat groupments of artillery, instrumental reconnaissance, and attached aviation (including missions, position areas and observation sectors, and primary and emergency sectors of fire).
- Time of readiness for opening fire.
- Duration of registration.
- Ammunition allowances.
- Location of command post and axis of signal communications.
- Location of supply points.

Confirmed by:
Commander
Air Force Unit Commander

Aviation Operations				Artillery Operations				
Time	Ground Composition and Missions	Course	Time	Missions	Assignment	Con- trols	Signal Comm.	AAA Mission
From: -2100 H To: -4 H	1. Period of preparation on D-1. Course—In accordance with the plans of Air Force and Long-Range Artillery Staffs: Group "A"—200 sorties by long-range aviation "IL-2"; Group "B"—300 sorties by "IL-2." 2. Targets: For Group "A" Nos. 1, 3, 4; for Group "B" Nos. 2, 7, 9. Missions—Neutralization of artillery and mortar batteries, destruction of field fortifications and personnel.							
-3.30 H -3.00 H -2.30 H	2 "D" 9 Bombers on Target No. 1 same on Target No. 2 same on Target No. 1.	In accordance with air force staff plans.	-3.35 H -3.05 H -2.35 H	Fire concentrations on AA batteries (targets Nos. 1565, 679, 186, 196, 102) on individual artillery pieces (Nos. 19, 304) and on newly spotted AA batteries.	The 7th battery of the army support group and one battalion in readiness to spot AA batteries. Responsibility of army support group commander.	Commander of artillery formation.	Wire signal communications and radio thru the O. P. of the commander of artillery formation.	Throughout all combat operations AAA supports aviation by AA barrages against enemy fighter aviation. Responsibility commander of "N" AA Division.

Special Remarks

1. Artillery fire on AA batteries must cease when air attacks begin.
2. During attacks by close-support aircraft, fire will be immediately directed against active enemy AAA batteries firing from positions outside of the area of air operations.
3. In the interval between air attacks, neutralization of enemy AA batteries shall be conducted on the individual initiative of the army group commanders.
4. As a safety measure when friendly aircraft appear artillery fire along the flight course will cease. Responsibility: Artillery corps commanders and army group commander.
5. Infantry units will mark their forward position by firing a series of red rockets.

Signed by: Chief of Artillery
Artillery Chief of Staff
Air Force Chief of Staff

Figure 17. Plan of coordination of artillery and aviation.

The engineer plan includes missions assigned to each unit during progressive combat phases; assignment of engineer personnel and allocation of matériel; time schedules; division of responsibilities; and individual missions executed by order of the chief engineer (army or army group).

4. FRAGMENTARY AND ORAL ORDERS

Fragmentary orders are used when speed in delivery and execution is imperative. These orders are issued successively as the situation develops. They consist of separate instructions to one or more subordinate units prescribing the task each is to accomplish in the operation or in the separate phases of the operation.

5. REPORTS AND SUMMARIES

Reports are classified as periodic reports and field reports. The schedule of reports, prepared by the Chief Signal Officer in cooperation with the Chief of Operations, is approved by the Chief of Staff.

Field reports are promptly submitted on the initiative of the subordinate commanders or of headquarters. Signed by the Commander and the Chief of Staff, they include:

- All operations taking place on the ground and in the air.
- Location and condition of the troops.
- Intensity and outcome of the engagement.
- New information about the enemy.
- Enemy strength, technical equipment, and activities.
- Decisions of the Commander with reference to the situation.

Summaries are submitted at fixed times and give an account of events which have occurred since the last summary was sent out. Summaries are classified as operations, intelligence, rear area, and signal summaries. The operations summary is prepared by the Operations Staff and is signed by the Chief of the Operations Section and by the Chief of Staff. It contains the following information:

- Ground and air operations and changes that have occurred in the situation since the last summary was forwarded.
- Nature of combat operations carried out by subordinate units.
- Condition of units, losses, and their present combat efficiency.
- Captured matériel.

General nature of the situation and enemy action.

Activities of Soviet air force.

Soviet front line.

Adjacent units and supporting troops.

Communications, weather, visibility, and condition of roads.

Location of command posts.

The intelligence summary is prepared by the Intelligence Section and is signed by the Chief of Staff and the Chief of the Intelligence Section.

Rear service summaries must give a clear account of the condition of the rear services. Signed by the Chief of Staff and the Chief of the Rear Services Section, they contain the following information:

Location of supply stations.

Transportation and evacuation roads (if changes have taken place).

Status of transportation.

Equipment shortages.

Status of evacuation (men and animals).

Amount of ammunition and fuel on hand.

Food and fodder in daily rations, reserve supply on hand or in transit.

Local resources and how they can be used.

Medical and veterinary situation in rear districts.

General conclusions.

Signal summaries are prepared by the Signal Section and are signed by the Chief of Staff and the Chief Signal Officers. They provide the following information:

Equipment available.

Types and requirements for signal communications between the command post, subordinate units, and the staff (commanders).

Requirements for signal communications between chiefs of arms and the commanders of directly subordinated units.

Requirements for signal communications for coordination between subordinated units and the various arms and between the second echelon of the staff, the command post, and rear units.

Organization of the air warning system, with indications of the location of posts and the method of communication between them.

Signal equipment reserve and its location.

Copies of summaries and reports are forwarded for the information of subordinate and adjoining units. In urgent cases, special conversations may be conducted over the telephone personally, or through liaison officers.

6. CODING SERVICE AND HANDLING OF DOCUMENTS

Responsibility for organization of the coding service in the field is assumed by the Commander and the Chief of Staff. The Chief of Staff organizes the coding service in the field through the Chief of the Operations Section. The latter selects the Commander's code keys, the conversation chart, map coding orientation points, and time of change. He controls the functioning of the coding service at his and subordinate headquarters.

Conversations concerning operations cannot be sent in the clear. Field orders and reports on decisions, from division and higher, may be transmitted by radio, in code, only if no other means of communication is possible. Violations may be made the basis of a court martial for disclosing military secrets. Clear text by radio is permitted in artillery to direct fire; in aviation, to transmit field orders in flight or, in case of forced landings, to report damage, when time does not permit use of code; and in the tank corps, to transmit field orders during combat. In all clear text messages, unit numbers are referred to by previously established code names.

Before opening a radio conversation, an officer must have at hand a coded situation map, a code conversation chart, radio-signal chart, pad of entry forms, pencil, compass, and watch. Conversation opens with the calling party stating his code name.

Field documents are divided into groups, based on urgency, as follows:

Group "G." Documents requiring immediate dispatch, urgent or operational priority. Field orders are always included in Group "G." The Commander and the Chief of Staff are the only persons who may classify documents as Group "G."

Group "K." Documents which are to be opened and read by the addressee only. Such documents are received and dispatched personally by the Commander and the Chief of Staff and are forwarded with the same priority as those in Group "G."

Group "B." All operational field documents, orders, and reports pertaining to combat organization and security. On these documents, group designation, time of delivery, and addressee are indicated.

Group "B" classification may be designated by all chiefs of sections at headquarters and the chiefs of arms and services.

All other documents bear no group designation and are forwarded by air and field mail.

Section V. COORDINATION AND CONTROL OF COMBAT

1. GENERAL

The Operations Section of the staff is responsible for the uninterrupted coordination of arms during combat, and for the organization of signal communications and liaison to insure this. Upon receipt of the mission, coordination of all arms is obtained by tables of combat coordination which are developed by the Operations Section together with the chiefs of arms. The main tactical controls—forward positions, artillery positions, line of departure, and barrage phase lines—are determined. The exact time schedule, missions, and areas of operation for each arm (artillery, tanks, aircraft, and chemical warfare) are established in accordance with the decision of the Commander.

Execution of coordination and adjustments in the tables of combat coordination are made possible by the direct control of the Commander, and by continuous intercommunication with subordinate units and between arms. The most important channels of intercommunication are through signal communications and liaison officers.

2. SIGNAL COMMUNICATIONS

The Chief Signal Officer is the immediate director of the Signal Service. He is fully responsible not only for the efficient and timely organization of signal communications and their uninterrupted operation, but also for the prompt transmission and delivery of all orders. Collaborating with the Chief of the Operations Section, on the basis of instructions received from the Chief of Staff and reconnaissance data, the Chief Signal Officer prepares a signal plan specifying the organization of communications throughout the projected operation. This plan is submitted to the Chief of Staff and issued with the field order.

a. Planning principles. Red Army signal communications systems are laid out in conformity with certain fixed principles. *Rigid centralization* and strict signal discipline are required to integrate the circuits of the various arms and subordinate units, eliminate unnecessary traffic, and maintain

signal security. *Concentration* of signal equipment to facilitate execution of the main effort is achieved by ruthless economy in secondary sectors; service and administrative nets, except for ammunition supply, are virtually nonexistent. At the same time, *duplicate facilities* and *signal reserves* are always built up in critical areas. For instance, the passing of barrage phase lines by infantry is verified by radio voice, radio telegraph, and rocket as well as by observation from a dense network of infantry and artillery observation posts (fig. 18). To provide absolutely reliable communications with the artillery in support of the main effort, the normal artillery nets are split, with separate forward switchboards, double wire communications, and radio circuits being provided. The rest of the artillery uses the basic nets.

Similarly, 1.5 to 2 reserve battery sets must be maintained for each division or corps radio station, with 2.5 to 3 sets for each mobile detachment or flank unit. Two or three alternate channels must be provided for each major radio circuit. Reserve equipment for wire communications is similarly maintained.

Communications are established *down and to the left*, and supporting units are responsible for communications with the supported units. Liaison officers provide their own communications.

Another important factor is the timely organization of communication centers in the *progressive displacement* of the command and other staff posts. This is achieved by the echeloned forward movement of radio equipment according to a plan designating the order of setting up and closing down the specific radio stations; by the echeloned forward movement of wire circuits in coordination with the main phase lines; and by notifying all subordinate staffs as to the new main axis of communication and the location of forward message centers and secondary communication centers.

The full *utilization of captured signal equipment* (especially wire for duplicating lines) has become part of Soviet signal doctrine, and special reconnaissance groups are sent out on the personal initiative of the chief signal officers of regiments and higher units to collect usable equipment left by the enemy.

b. Signal nets. The signal doctrine of the Red Army stresses reliable and often duplicated communications, which are deemed necessary for operational control and coordination of combat units at the expense of administrative circuits. This is

well illustrated by the types of signal nets which are habitually established in all formations of combined arms (fig. 19).

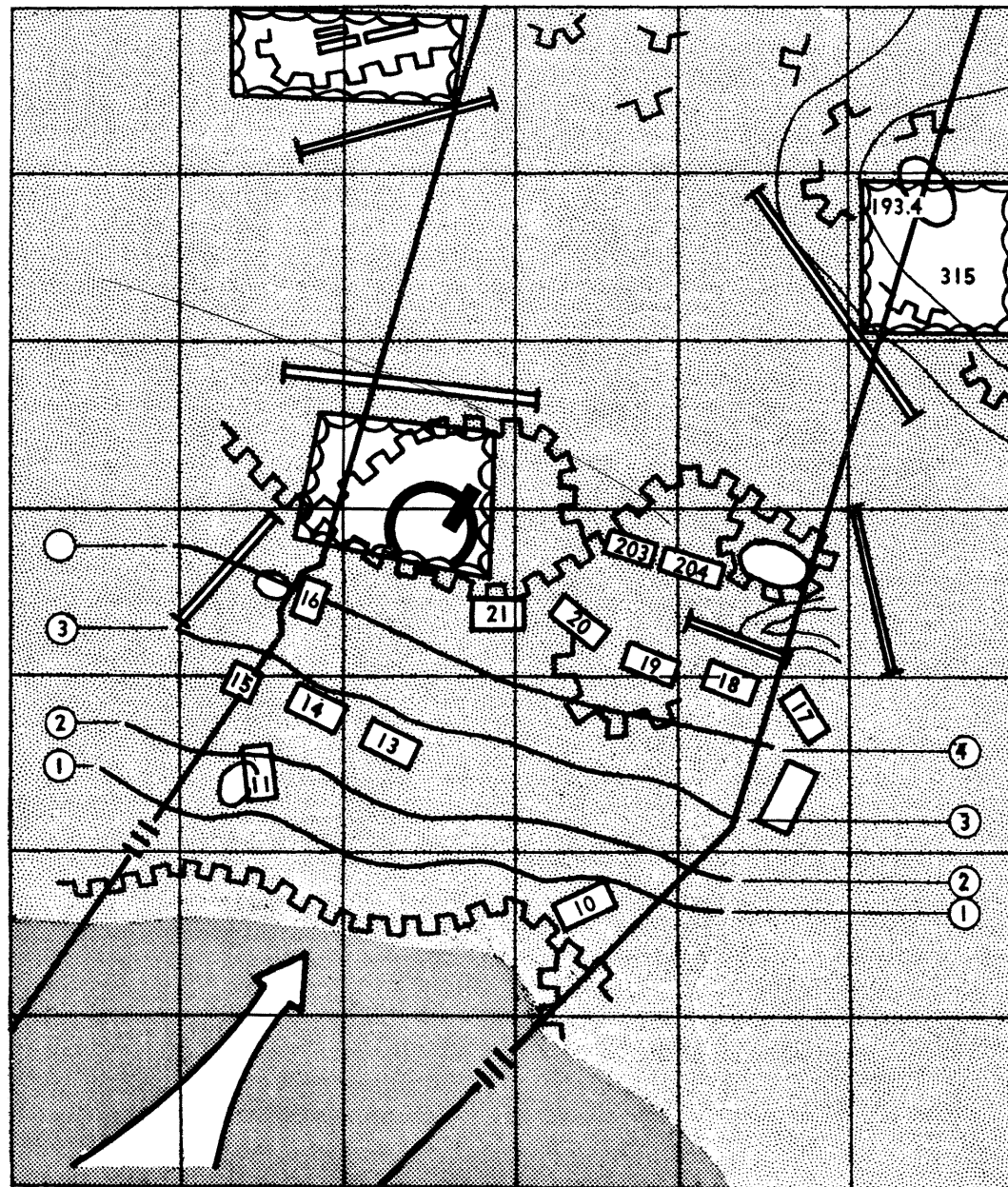
Two types of *command nets* are established. One command net connects the command observation post of the Commander of Combined Arms with the command post, the command observation posts of all immediately subordinate units, and those of the chiefs of arms. The second command net connects the command observation post of the chief of a particular arm with the chiefs of that arm in subordinate units. Both wire and radio are used. When radio is used, a set is assigned to each commander within the net and follows him wherever he may go. The establishment of the combined command net is often facilitated by the proximity of the principal command observation posts in units larger than the regiment. The command posts of regiments and higher units are often equipped with public address systems connected with the command net. This arrangement insures the dissemination of key decisions to all staff divisions, expedites transmissions of orders, saves time, and eliminates several circuits within the command post.

The *staff net* connects the command post of a formation with the command posts of immediately subordinate units. Staff nets are used for all routine staff operations. Wire, duplicated by radio, is used.

The *cooperation net* is established to insure synchronized action of all participating arms. Both wire and radio communications, supplemented by visual signals and liaison officers, are established through the forward message center to the command posts of the units participating in a given operation or in a phase of this operation.

The *artillery fire control net* is distinguished from the artillery command net in that, in addition to the command posts of each organic and attached artillery unit, it includes the command post of each supported unit, artillery forward and paired observation posts, and firing positions. Provisional mortar battalions (formed by grouping regimental mortar batteries) are included in the artillery fire control net. Wire communications are duplicated by radio, liaison officers, and messengers.

The *reconnaissance net* provides direct communication between each reconnaissance element and the command posts of the responsible headquarters. Dissemination of the results of reconnaissance is accomplished through the staff net. While radio is normally used, wire is often laid to forward information-collecting centers which are set up when recon-



FIRE ON EACH PHASE LINE STARTS ON TIME SCHEDULE

LEGEND

SIGNALS FOR LIFTING FIRE:

- 1—1ST PHASE "EAGLE" YELLOW ROCKETS, RADIO 111
- 2—2D PHASE "LION" GREEN ROCKETS, RADIO 333
- 3—3D PHASE "TIGER" RED ROCKETS, RADIO 555
- 4—4TH PHASE "BAT" WHITE ROCKETS, RADIO 666

INTERDICTION FIRE BY CORPS ARTILLERY

VOLLEY FROM ROCKETS

SPECIFIC TARGETS

Figure 18. Plan of coordination of artillery support of an infantry attack in depth.

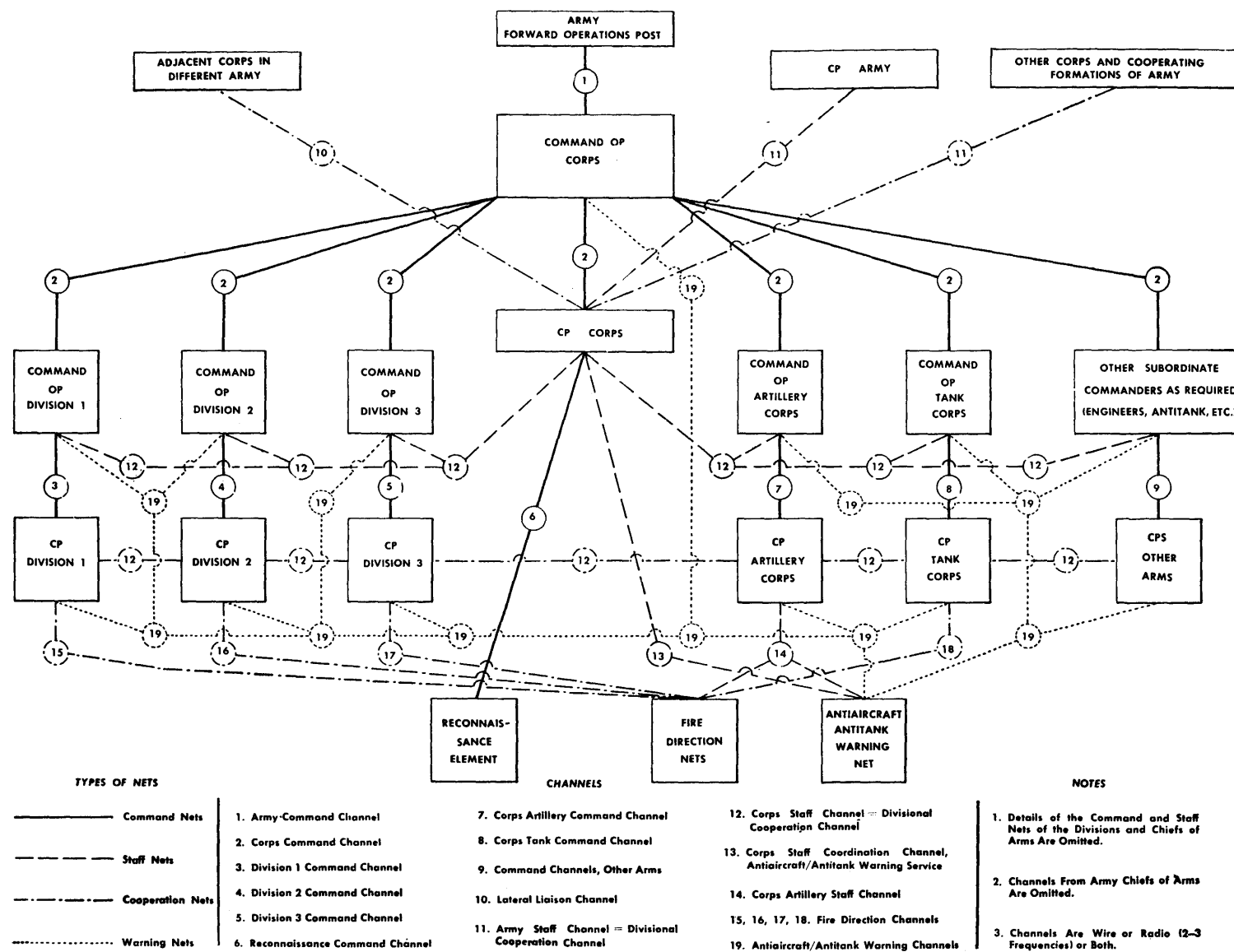


Figure 19. Basic signal system, rifle corps level. (NOTE.—In the chart, "Artillery Corps" should read "Corps Artillery" and "Tank Corps" should read "Corps Tanks.")

naissance elements operate for long periods at a considerable distance from their headquarters.

In large formations a distinct *antiaircraft and antitank warning net* is established. In smaller ones the air and tank raid warning net is superimposed on one of the other nets, with the highest priority being given to "flash" messages.

In armies and other formations which have organic air support, an *air liaison net* is set up. Wire, duplicated by radio, connects the headquarters of the

formation of combined arms with the headquarters of the supporting air unit.

c. Signal elements. The communications system is organized according to the following elements:

- Signal centers.
- Primary and secondary axes of signal communications.
- Intermediate stations.
- Message centers.
- Multiple-station and two-station radio nets.

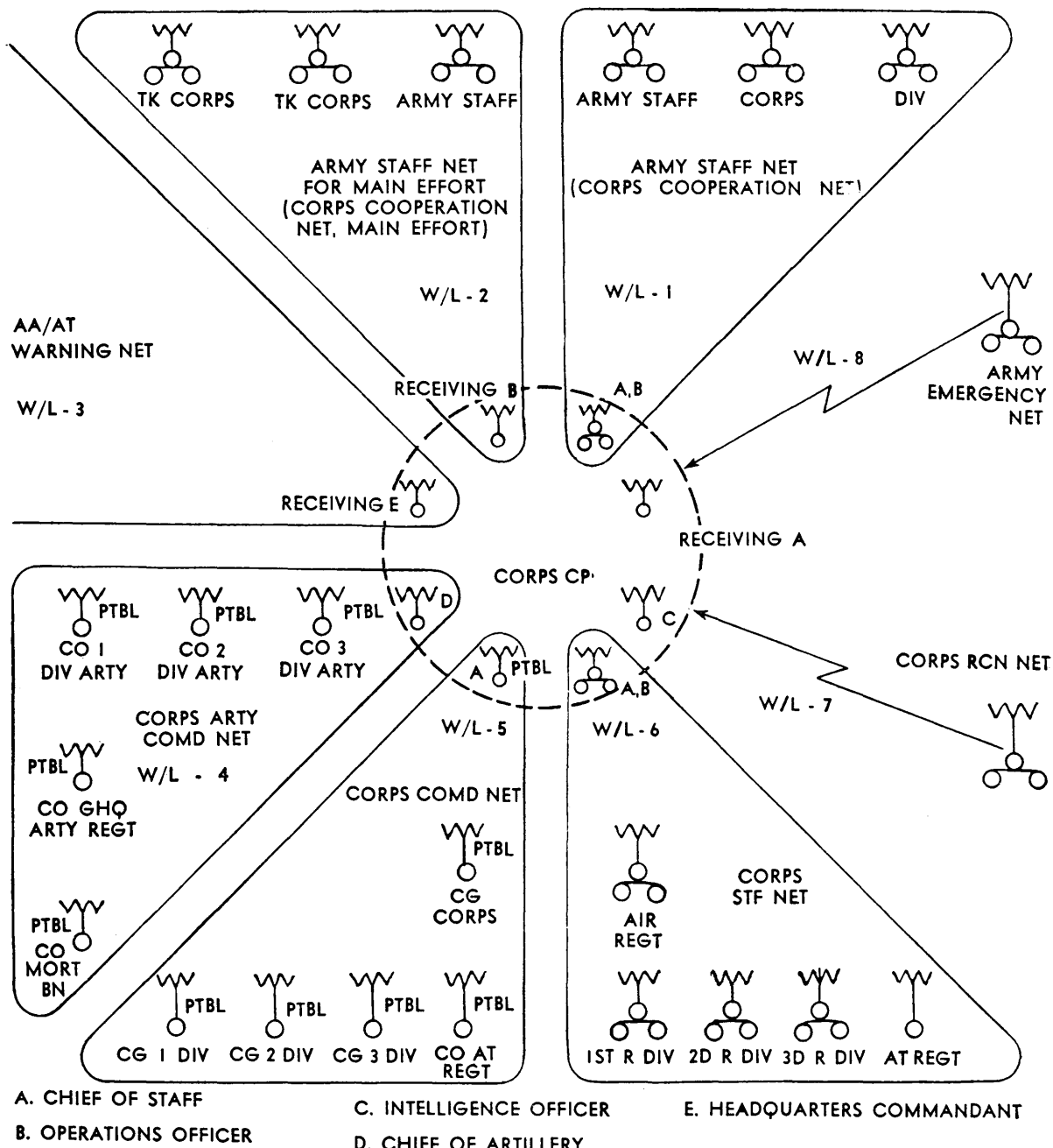


Figure 20. Rifle corps radio net (simplified).

The signal center is the point of concentration and intersection of primary and secondary axes of signal communications. The main centers are established at the command posts and provide staff and cooperation channels in all directions (fig. 20). Reserve signal centers are set up in the areas of reserve command posts, and maintain communication in the event of displacement of headquarters from the main to a reserve command post. Auxiliary centers are points where communication can be made with flanking communication lines. Artillery signal centers are also habitually established.

to enable the command to communicate with subordinate command posts, with the rear, with cooperating arms, with neighboring units, and with headquarters of reinforcing units.

Intermediate stations are established along primary and secondary axes of communication. The chief function of these stations is to maintain communications with separate units. Subordinate unit headquarters either utilize intermediate stations or connect these stations with their communication axes (fig. 21).

Message centers circulate necessary field docu-

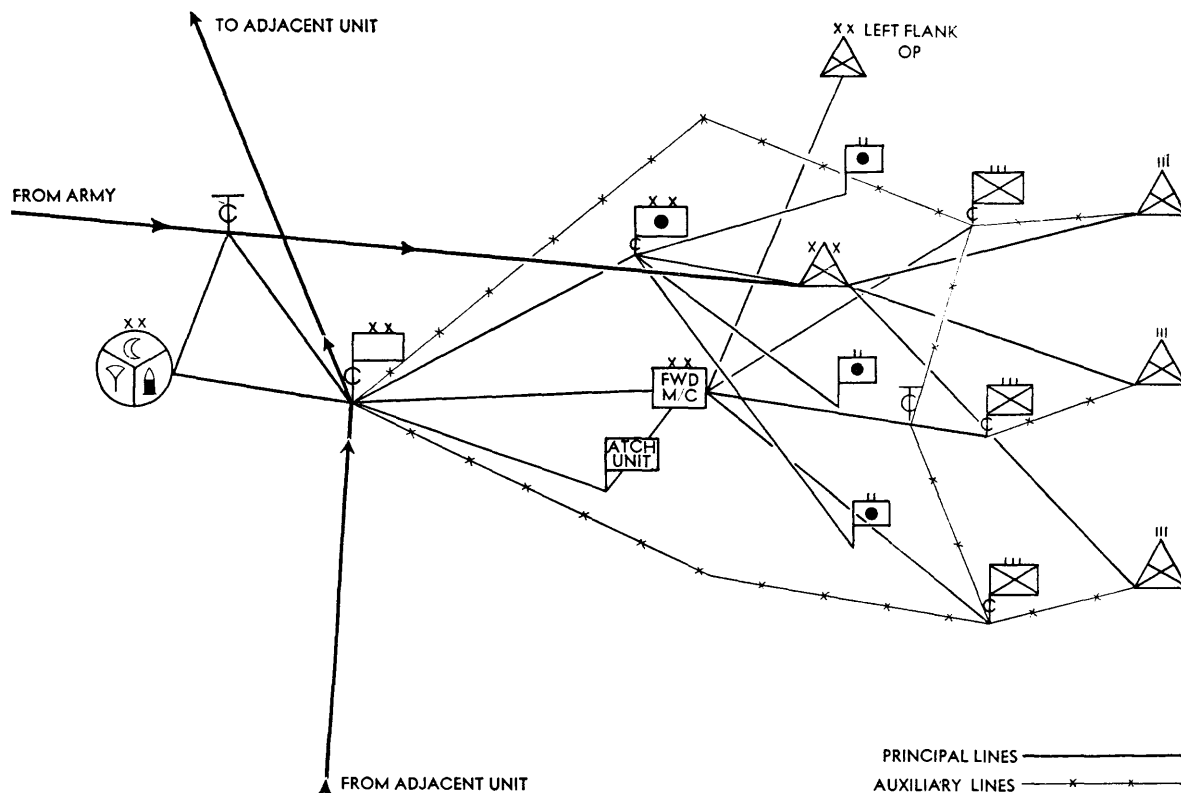


Figure 21. Rifle division wire net (simplified).

The primary axis of communications is the base for all other communication lines to subordinate and cooperating headquarters. Normally it consists of an all-wire circuit from the main switchboard at the command post to a forward switchboard near the command observation post; for emergencies, one or more switch lines provide alternate circuits. Primary axes provide a foundation for the entire Red Army communications system, especially during the displacement of command posts in the course of combat.

Secondary axes of communication are developed

ments among subordinate headquarters, and collect and deliver reports emanating from them.

A multiple radio net comprises a group of radio stations operating in accordance with general instructions concerning their employment. A two-station net constitutes two radio stations maintaining communications on a fixed wave length. This two-station net is used most frequently for command, reconnaissance, and lateral liaison circuits.

d. Equipment. In infantry units, wire is the primary means of signal communications in all except mobile situations. All-wire circuits are used

for major circuits. Telegraph is used extensively for routine signal traffic at divisional and higher level, and teletype is used by armies and army groups. Except in extremely mobile situations, wire communications only are maintained with the rear services and installations.

While the organic wire facilities of the Soviet rifle division are only slightly greater than those of a U. S. infantry division, they are heavily reinforced for operations. In an offensive situation, 150 command and observation posts were set up in one rifle division sector by the division and supporting artillery. Approximately 30 switchboards were used to connect some 700 circuits joining the various command observation posts.

During the preparatory phase of an offensive, wire communications are established with the tank and mobile infantry units at their advance command posts (near the line of departure). Mobile observation posts maintain wire communications with the supporting artillery and mortar units.

The organic allotment of radios in a Soviet rifle division is a little over 10 percent of that of the U. S. infantry division; radio is used as an auxiliary to wire, principally in command and artillery fire control nets. In Soviet tank and mechanized units, however, the allotment of radios is about 30 percent of that of similar U. S. units. In special situations large quantities of additional radio equipment are furnished from higher echelon signal reserves. For example, 27,174 radios were used in the Belorussian operation in June-July 1944.

Centralized control of radio frequencies and grouping of available radios into radio nets insure efficient use of allotted equipment. Strict regulation of frequencies and economy of messages simplify technical employment of radios and also aid in maintaining signal security. The use of sky-waves even for short distances (up to 180 miles) reduces the number and types of radio sets necessary to maintain adequate communications. Radio centers at army and higher levels and allocation of priorities to messages reduce the number of necessary sending sets.

Auxiliary methods of signal communications are visual signals (rockets, blinkers), public address systems, liaison planes, and messengers.

e. Responsibilities of Commander, Staff, and Chiefs of Arms. During combat, the Commander must be at the command observation post, from which he can observe and control the main

effort. In order to assign missions during the course of combat and to direct coordination between arms efficiently, he must have at all times complete knowledge of the capabilities of each arm and of the equipment and supplies available to both his own and enemy forces.

Normally, some members of the staff, the chiefs of the arms, and the Chief Signal Officer are with him. The staff at the command post maintains control over secondary operational areas and rear services. Liaison with neighboring and higher commands is continuous.

The tactical plan is prescribed in the field orders and annexed tables of combat coordination, issued by the Commander. Supplementing these are the orders and plans of the various arms (artillery, infantry, engineers, tanks, etc.), the primary responsibility for which rests with the chief of each arm.

It is the duty of the Commander, either by means of personal reconnaissance or through his staff, to check on the execution of these combat plans. During the course of operations, maneuvers may deviate from the preestablished tactical plans. Wide latitude is permitted subordinate commanders (of arms and lower units) to use their full initiative in attaining assigned missions. Over-all responsibility, however, remains with the Commander, who observes the progress of maneuvers, orders support, and commits reserves.

The appropriate staff sections conduct incessant observation and reconnaissance from ground and air, constantly collect and correlate incoming reconnaissance and observation reports from subordinate units, submit reports to the commander concerning front-line developments, suggest appropriate steps to be taken, and organize the coordination demanded by the development of new situations according to the commander's decisions.

When the Commander or Chief of Staff cannot personally control combat phases, command liaison officers (often the commanders of arms or services) are sent as his deputies to subordinate units.

If, on the basis of his personal observation, the Commander decides that alteration in the prescribed phase-lines with reference to time or space are necessary, he issues fragmentary orders amending the original orders. Fragmentary orders may also be issued on the basis of reports submitted by the chiefs of the various arms and by the numerous observers along the front.

Throughout the combat phases, the plans of the

arms are continuously coordinated and adjusted between the staffs of each arm, and also with the staff of the Commander. This cooperation insures the fulfillment of the prescribed time and space schedule, the maximum exploitation of tactical capabilities, and the maintenance of a joint system of combat

security and camouflage discipline. Lateral adjustments may be made among the chiefs of the various arms (and lower units) as to the methods of attaining the phase-lines. The Commander is advised by signal (wire, radio, or rocket) as each phase-line is attained.

PART II. TACTICS OF GROUND ARMS

Section 1. INFANTRY

1. GENERAL

Soviet infantry units are characterized by great strength in automatic weapons and mortars. Their tactical mobility is low if they are equipped only with organic transport. Their moving weight is low, compared to similar U. S. units, and as a result their maneuverability is good. The rifle regiments (less their supply trains), rifle battalions, and rifle companies have horse transport only and can move across country even in difficult terrain. The supply capacity of Soviet rifle units is adequate even for heavy combat, but their maintenance facilities are inadequate and must be supplemented by army resources.

2. BASIC DOCTRINE

Soviet tactical employment of infantry is predicated on rapidity of maneuver of small groups, concentration of fire of automatic weapons, and shock action. In fluid situations, rapid deployment and immediate engagement with the enemy are the rule. In more stable situations, engagement with the enemy is generally preceded by thorough reconnaissance and planning, and detailed rehearsal of the contemplated maneuver, including even the tactics of the individual soldier. The objectives of infantry attack are to break the cohesive defense of the enemy, to divide him into small isolated groups, and then to destroy him. The plan of maneuver usually calls for an advance to the flanks of the enemy, culminating in a single or double envelopment. This plan may be varied to conform to the situation or to achieve surprise.

Soviet infantry units are deployed for combat similarly to the U. S. practice; that is, in line, wedge, inverted wedge, column, and echeloned to right or left (fig. 22). The size of the reserve is rigidly controlled. For example, if a regiment on the defensive occupies an interior position, the reserve consists of one rifle company, some antitank

rifles, and the regimental antitank and howitzer batteries. In a similar situation, the battalion reserve will consist of one rifle platoon, one antitank rifle platoon, the battalion antitank guns, and several heavy machine guns.

A regiment generally attacks on a front 1,500 yards wide; an interior battalion on a front up to 700 yards; a company up to 350 yards; and a platoon up to 100 yards. On the defensive, a battalion occupies an area up to 2,000 yards wide and 1,500 to 2,000 yards deep; and a company occupies an area up to 700 yards wide and 700 yards deep.

To insure the success of its missions, the Red Army infantry regiment has at its disposal several specialized units: the reconnaissance company, the submachine gun company, the antitank rifle company, the heavy mortar battery, the antitank gun battery, and the regimental howitzer battery. The reconnaissance company executes normal reconnaissance and screening tasks. The submachine gun company is used for rapid flanking moves, infiltration, security of accompanying tanks, and as a mobile reserve. The antitank rifle company provides antitank security in all phases of combat. The antitank gun battery, together with battalion antitank guns, is used to repel tank attacks in especially vulnerable sectors. Regimental and battalion antitank guns, together with the regimental artillery, are used extensively for direct fire in support of river-crossing operations and assault of fortified positions. The heavy mortar battery is used under centralized control during artillery preparation on the offensive and for laying down barrages on the defensive. It is under control of supported units in the assault phase of the offense and in decentralized defense.

3. APPROACH MARCH

A Red Army infantry regiment, acting as an advance guard of a division, has the missions of overcoming the resistance of enemy outposts, occupying terrain favorable for deployment of the division, and orga-

nizing preliminary reconnaissance. To accomplish these missions, the regiment advances in the following order: advance guard preceded by reconnaissance elements, the main body, the flank guards, and the rear guard. The advance guard consists of an infantry battalion reinforced by artillery and engi-

an exposed flank, the flank guard on the exposed side is increased to approximately a battalion (fig. 23). Artillery elements which form parts of the main body must always be ready to support the advance guard. During long halts, artillery habitually deploys for action, while antitank units reconnoiter and deploy

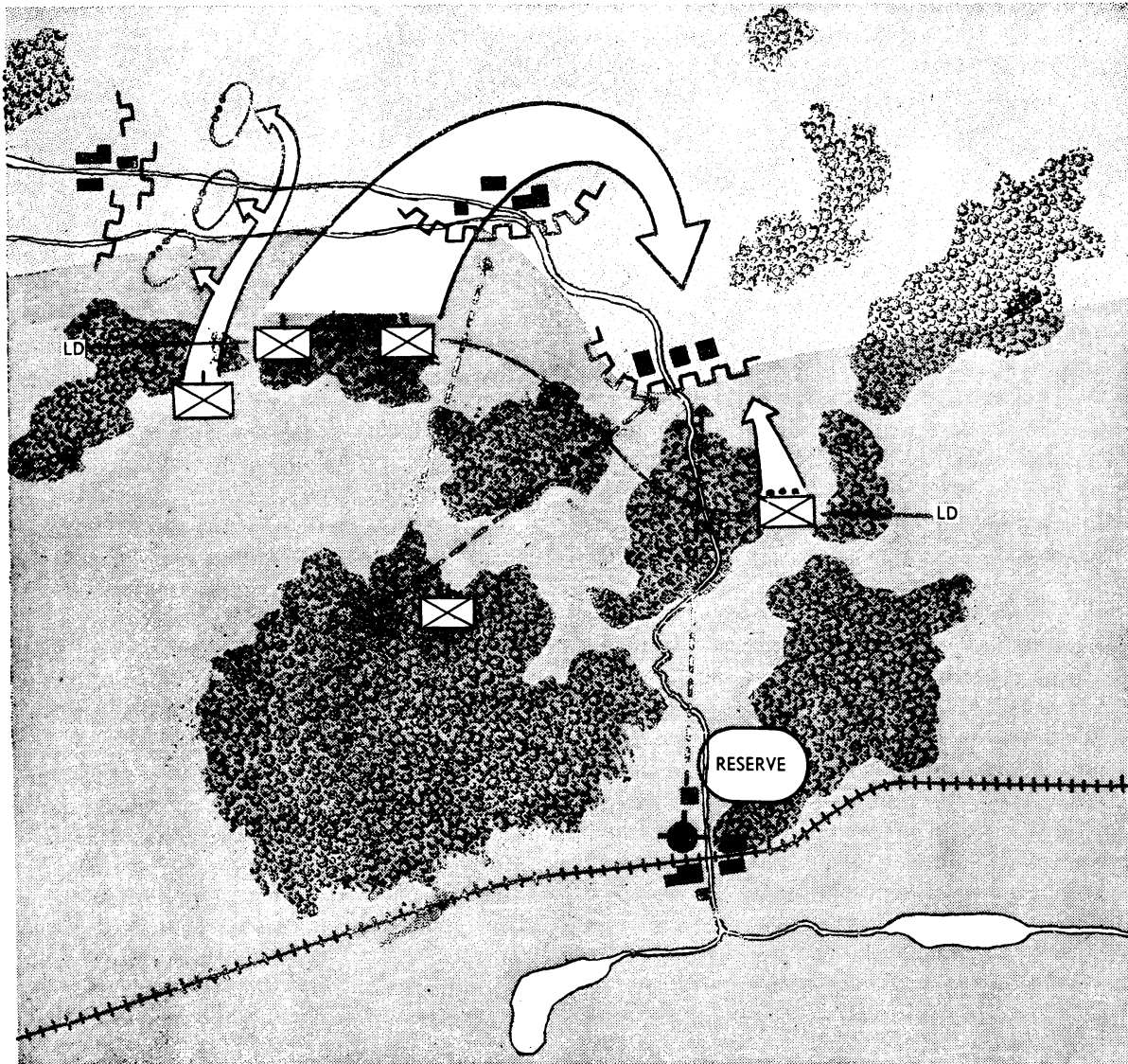


Figure 22. Plan of attack, rifle battalion echeloned to the left.

neers. The main body follows 1.2 to 1.8 miles behind the advance guard. It consists of several sections, each comprising a balanced fighting group of approximately battalion size. The main body is flanked by security groups consisting of rifle platoons reinforced with heavy machine guns and antitank rifles. The rear guard, likewise, consists of a reinforced rifle platoon. If the regiment advances along

in sectors considered especially vulnerable to attack by tanks.

If the advance guard encounters only disorganized resistance, it overpowers enemy rear guards while the main body continues advancing. If the advance guard encounters organized resistance at a well fortified position, the regiment deploys for action and endeavors to overpower the opposition by speed of

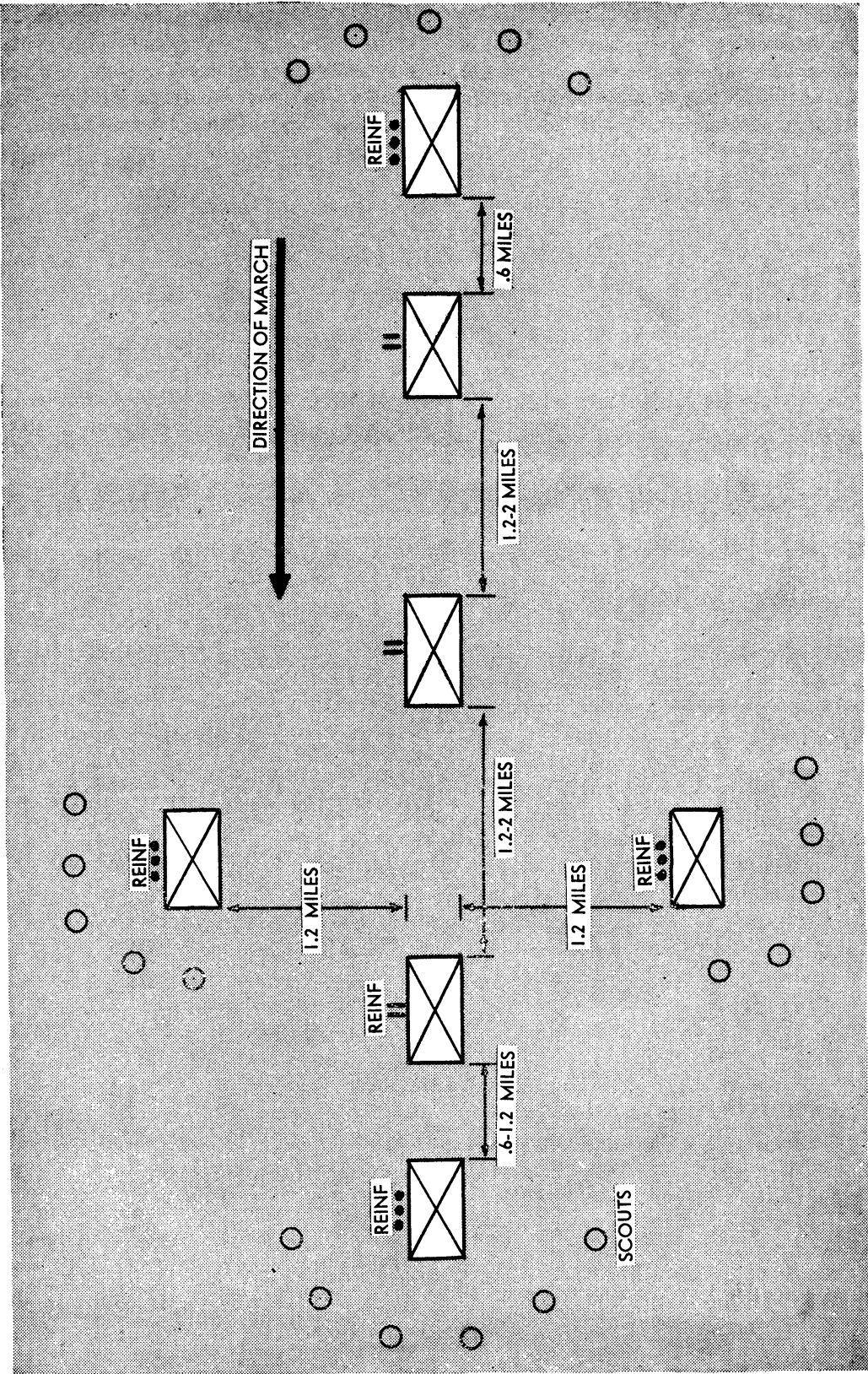


Figure 23. Infantry regiment in approach march formation.

maneuver and shock action. If the enemy is fully prepared to defend organized positions, the regiment secures advantageous ground for the deployment of the division and for organized intensive reconnaissance. During the advance the Commander retains his command post in the advance guard.

sion is determined by the over-all objective of the division. It generally consists of overcoming all enemy resistance in the assault sector including enemy artillery positions. Both the initial and the successive missions are designated in terms of space and time. The assault is conducted in three distinct

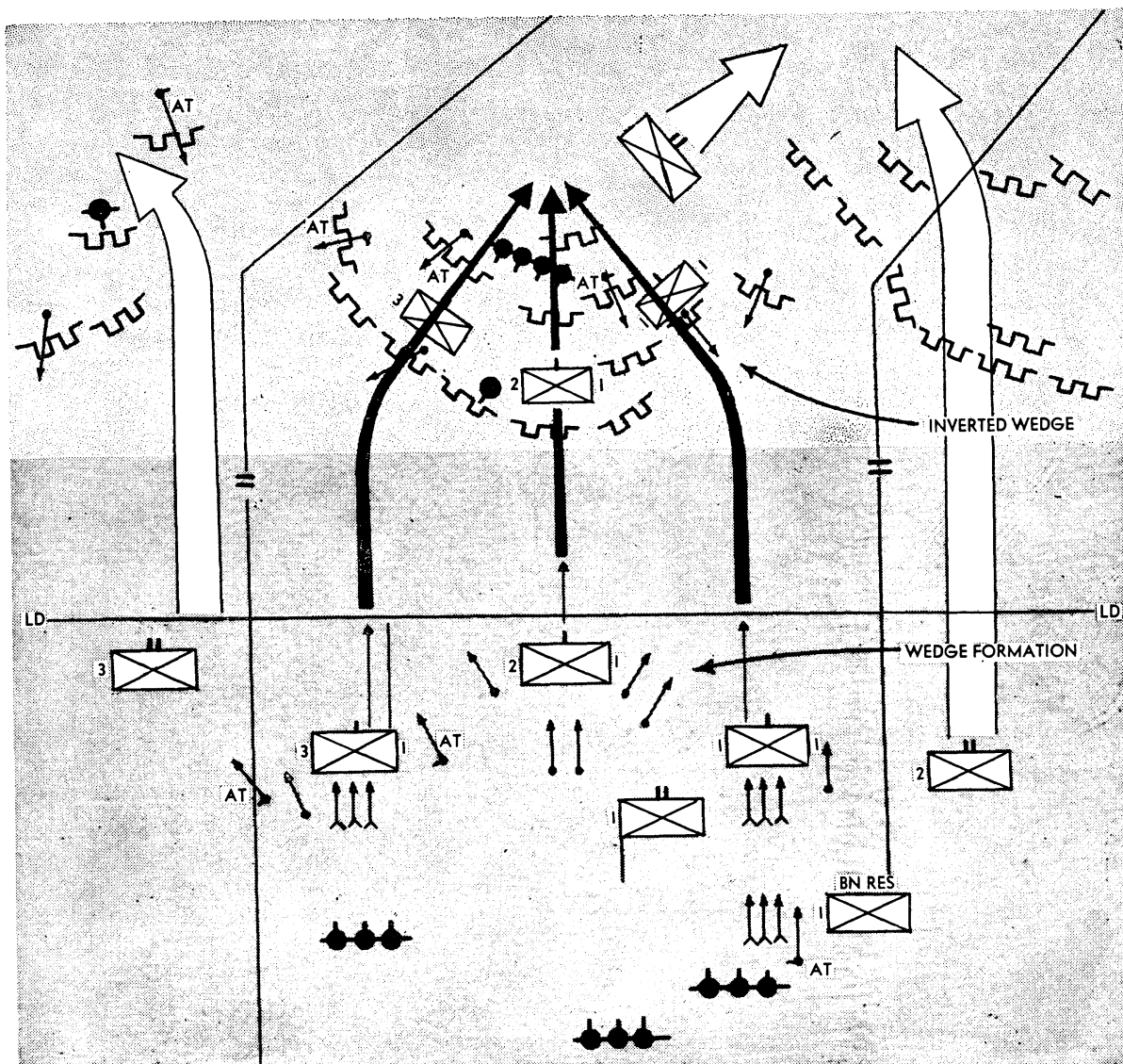


Figure 24. Example of infantry offensive, rifle battalion in double envelopment. Example of wedge and inverted wedge.

4. THE OFFENSIVE

In the offensive, infantry generally has two successive missions: First, it must break into the forward defense lines of the enemy in a particular sector and destroy or neutralize the system of infantry and anti-tank weapons. This mission is accomplished by the initial infantry assault groups. The subsequent mis-

phases: the preparation, the execution of the initial mission of the infantry groups, and the penetration of the enemy defenses in depth in the execution of the subsequent missions (fig. 24).

a. Preparation for the attack. The preparation phase includes command and staff reconnaissance; the command decision; formulation of the

operations, intelligence, signal, and rear area plans; and formulation of the tables of combat coordination. Upon receipt of their missions, subordinate commanders formulate their plans of maneuver and designate assault groups for the execution of specific tasks. A typical assault group consists of three to five engineers, a rifle platoon, and several antitank rifles.

Some battalion mortars and battalion guns are assigned to the various assault groups according to the general and partial fire plans. Heavy machine guns are either allotted to the assault groups, or retained under centralized control.

According to the demands of the situation, regimental and, less frequently, divisional specialized arms are distributed among the assault groups. If time permits, the assault groups rehearse the plan of maneuver both individually and as a whole. These rehearsals are generally conducted in daylight and at night over terrain similar to that of the contemplated operation and far enough removed from the enemy to escape his observation and interference. Before important operations it is not uncommon for Soviet troops to spend considerable time drilling in standard and specialized use of their weapons.

b. Conduct of the assault. During the assault, regimental and battalion commanders remain at their command observation posts. Only in exceptional circumstances may they leave their command posts to lead subordinate units in combat. It is considered imperative that the final artillery barrage be laid so that there is a minimum of time between it and the moment that the infantry reaches the forward defense lines of the enemy. Regimental and battalion antitank guns and mortars will continue to fire on their targets until the last possible moment. The infantry must be placed so as to reach the enemy forward lines from 1 to 2 minutes after the artillery barrage is lifted. Red Army regulations state that infantry can follow within 200 yards and 100 yards, respectively, of forward and flanking barrages of artillery firing at ranges of 2,000 to 3,000 yards. Infantry can follow within 150 to 200 yards behind the bursts of 82-mm mortars, and within 200 to 250 yards behind the bursts of 120-mm mortars.

During the assault, antitank guns and mortars revert to the control of the supported units. Regimental artillery supports the assault in depth and prepares to displace forward. Battalion commanders do not commit their units in extended fire duels with the enemy centers of resistance; instead, they

move ahead, leaving small detachments to deal with the by-passed enemy.

When the infantry advance reaches the artillery positions of the enemy, widening of the breach, destruction of the by-passed centers of resistance, and exploitation of the break-through are achieved by the regimental reserve, assisted by some of the assault groups. The remainder of the assaulting force consolidates captured positions, prepares to repel counterattacks, or regroups and continues the advance.

If tanks accompany the infantry attack, regimental and battalion artillery concentrate fire on enemy antitank defenses. Infantry and engineers protect the tanks from hostile infantry, neutralize antitank minefields and other antitank obstacles, and help evacuate damaged tanks. Tanks must not outdistance their supporting infantry by more than 400 yards. Typical missions which may be assigned to accompanying tanks by an infantry commander include:

- Determination of the location and number of breaches to be made in antipersonnel obstacles.
- Firing positions of the enemy which are to be destroyed.
- Sectors of responsibility for repelling counterattacks.
- Assembly areas.
- Subsequent missions of tanks.

5. THE ENCIRCLEMENT

The Soviet encirclement is carried out in two phases: the process of encircling an enemy force, and the destruction of the encircled force. Although under special circumstances a smaller force may encircle and destroy a larger one, normally a regiment is required for encircling and destroying a battalion.

In addition to problems which accompany frontal assault, combat for encirclement requires the maintenance of lines of supply and evacuation over longer routes, as well as protection of the exposed flanks and rear of an inverted front. Displacement of the service centers must be coordinated with the advance of the combat teams in order to utilize service personnel most efficiently. While the break-through sector is narrow, control of the service units must be centralized; that is, service elements of two battalions may be combined to render most effective aid to the encircling and security units. When the break-through sector becomes wider, these service

elements revert to the control of the parent units (figs. 25 and 26).

Engineers must be allotted to the service elements in order to establish and maintain supply and evacuation routes, and to help the security units in the construction of defenses along the exposed flanks and rear. Infantry reinforced with antitank weapons must be made available to the commander of the rear echelon; these are assigned the tasks of clearing the break-through area of enemy stragglers, mop-

commander to initiate pursuit. Pursuit, once it is started, may be halted only by the senior commander. In order to prevent the enemy from withdrawing and forming march columns, infantry battalions increase pressure along the entire sector and the artillery and mortar batteries conduct interdiction fire on road junctions and assembly areas. The Commander moves his reserves forward, groups them into reinforced platoons, and deploys them for rapid advance in the direction of the main effort of the

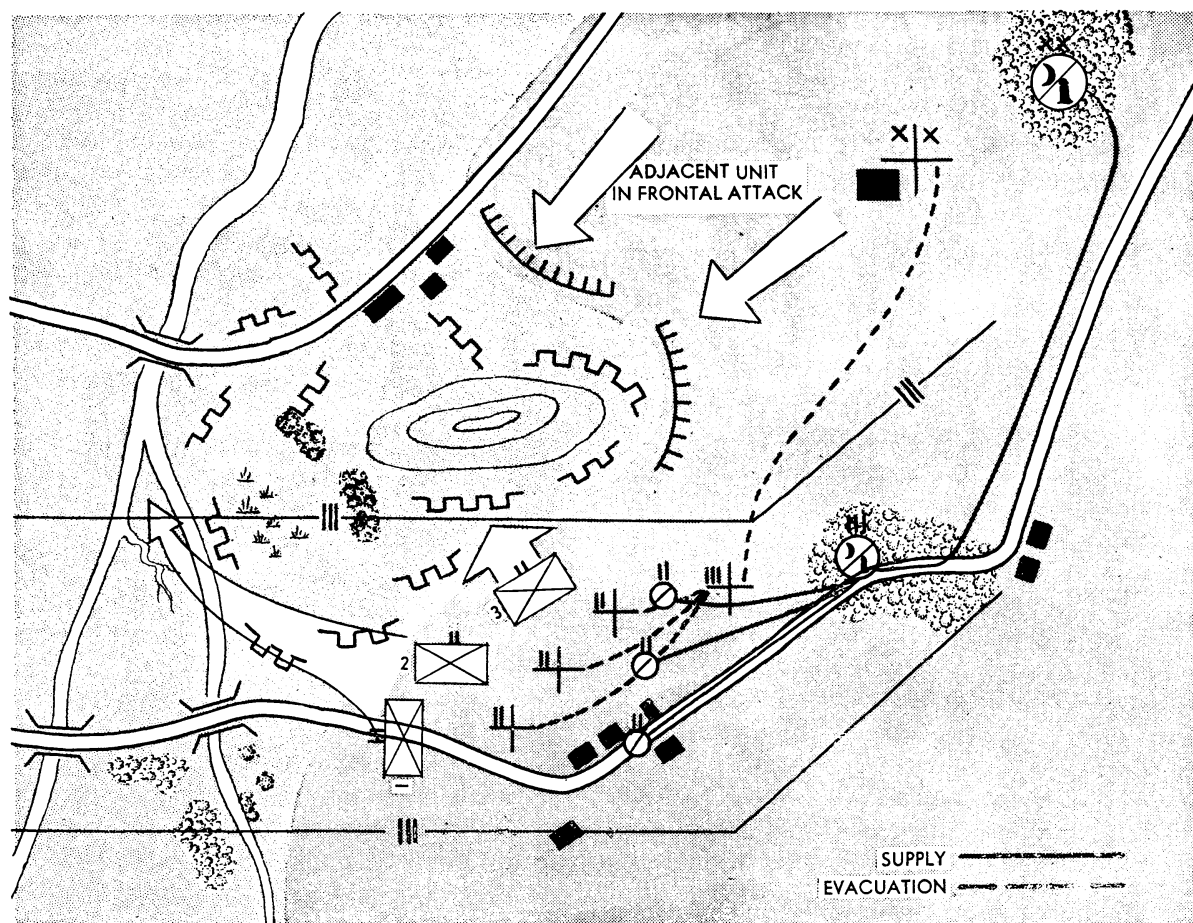


Figure 25. Organization of lines of supply and evacuation at the start of an encirclement.

ping up the by-passed centers of resistance, and defending the exposed rear and flanks of the inverted front. Medical elements of the encircling battalions must have additional personnel for evacuation of the wounded along longer than normal routes.

6. THE PURSUIT

The slightest indication of the enemy's intention to withdraw from combat is a signal for every Soviet

assaulting battalions. The submachine-gun company, grouped by platoons, infiltrates into the enemy's rear area, disrupting his lines of communication and control.

As the pursuit develops, artillery and mortars advance by bounds so that one echelon is ready to fire missions on request from the pursuing elements, while the other echelon displaces. The antitank-rifle company and the regimental antitank battery

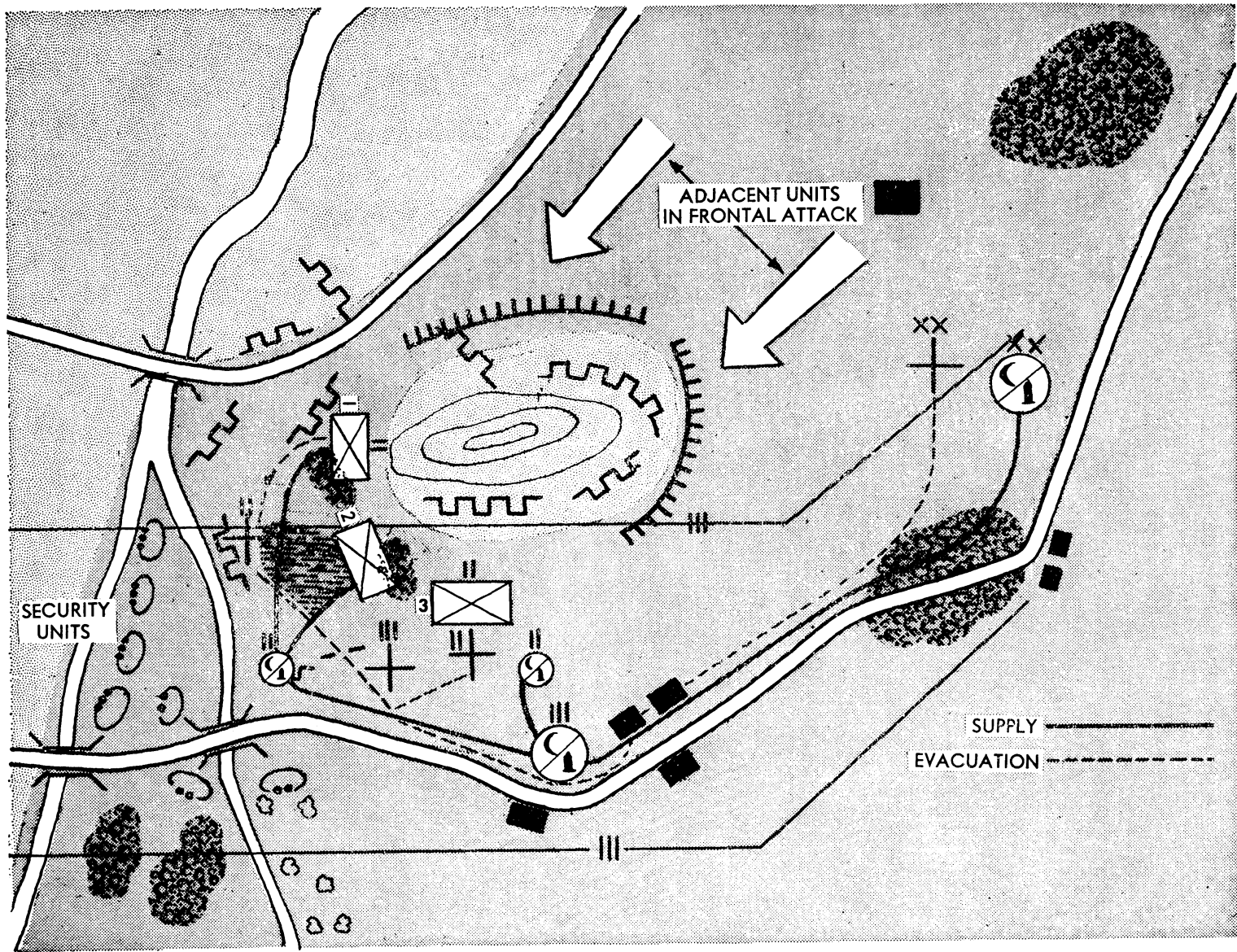


Figure 26. Organization of lines of supply and evacuation during an encirclement. Note that the supply and evacuation centers of the two encircling battalions have been combined.

organize protection of the flanks against counterattacks. Rear-area security groups keep the lines of supply clear of enemy stragglers. The engineer officer organizes obstacle-clearing detachments which march with the pursuing elements and facilitate the advance of artillery, mortars, tanks, and supply vehicles.

If motorized transport is available, pursuit detachments are organized and sent in parallel columns along secondary roads in order to overtake the enemy and strike him from the flanks and rear. A motorized pursuit group generally consists of a rifle company, a reconnaissance squad, a machine-gun platoon, an engineer squad, and an antitank-gun team. If possible, each pursuing vehicle is provided with an anti-aircraft machine gun. If tanks are available for the pursuit, infantry riders are assigned from the battalions. Regimental mortars advance with the infantry, but if half-tracks or other suitable transport is available, mortars may be loaned to tank units for exploitation of the break-through. As the pursuing elements outdistance the original battalion assault teams, these teams are also organized into pursuit groups and sent on supplementary missions.

During the pursuit, the regimental staff organizes flank and rear security detachments, controls operations of the reconnaissance elements, organizes coordination between the pursuing groups and their supporting units, and provides for continuous supply of ammunition and fuel.

7. THE DEFENSIVE

The objectives stated in Red Army defensive doctrine are: hold important positions with small forces; utilize natural and artificial obstacles; inflict heavy losses on the enemy by an organized fire of all weapons, thus forcing him to abandon the attack; and finally, destroy him by a determined counterattack. Red Army doctrine for the organization of defensive positions prescribes the following requirements:

The positions should be established in depth. Each defensive area and its parts should be capable of all-around defense.

The defense should be supported by planned counterattacks.

The fire plan should be designed to provide fire trap concentration on sectors subject to probable enemy attack.

In setting up defensive positions, all commanders are responsible for the construction of field forti-

fications, shelters, main and reserve command and observation posts, and main, alternate, and night firing positions for artillery and mortars. All defense installations and fields of fire are checked by the Commander and the Chief of Engineers. In the Red Army, lack of care and thoroughness in organizing and executing the construction of defense installations is considered one of the most serious of military offenses.

a. Centralized defense. Tactical doctrines of the Red Army define two types of defense: centralized and decentralized. Centralized defense is preferred. It is organized to hold the main approaches to important positions with a system of mutually supporting strongpoints. Secondary approaches are covered by fire and by a relatively large mobile reserve. In this type of defense, artillery is massed, counterattacks are initiated by the over-all commander, and supply installations are centrally located. Wire communications are established along the main defense axis.

b. Decentralized defense. Decentralized defense is undertaken when the forces available for defense of a sector are insufficient for the centralized type of defense. Decentralized defense consists of a series of self-sufficient islands of defense, each with a local commander, artillery, and supply installations. The reserve of the over-all commander is relatively small, and counterattacks are undertaken on the initiative of the local commanders. Communication is accomplished primarily by radio and visual signals.

c. Infantry division defense. In general, the defensive positions of an infantry division consist of an outpost line, a security line, and the main line of resistance.

OUTPOST LINE. The outpost line is designated by an army or divisional commander. It is sited 6 to 10 miles in front of the main line of resistance. The outpost line is intended to inflict losses on the enemy, to disrupt his attack groupments, and to gain time. It consists of forward and intermediate field positions manned by forward detachments.

SECURITY LINE. One-half to one mile in front of the main line of resistance, an infantry division forms a security line. The purpose of this line is to prevent surprise attacks and to form an anti-reconnaissance screen. It is established according to instructions of the divisional commander. The security line consists of a number of strongpoints manned by elements of the forward battalions and

supported by their fire. Often, in order to deceive the enemy, the security line is made strong in front of dummy positions and weak in front of the main defensive positions.

MAIN DEFENSE LINE. The main defense line is intended to stop the attack of the hostile infantry and tanks, and to force the enemy to abandon the attack. The main line is divided into regimental sectors, which are in turn divided into battalion sectors and regimental reserve sectors.

Each regimental sector consists of several centers of resistance which integrate a system of strongpoints for all-around defense. The strongpoints con-

ASSIGNMENT OF MISSIONS. After personal reconnaissance of the terrain, the divisional commander assigns a defensive mission to the regiments. The regimental commander initiates command reconnaissance and issues preliminary instructions to his staff. These instructions include orientation points, boundary lines between battalions, and location of the outpost line, the security line, the main defense position, and the regimental reserve. The regimental commander sketches out the location of the principal antitank installations and specifies time limits for the completion of the various defense preparations. Instructions to the battalion commanders include

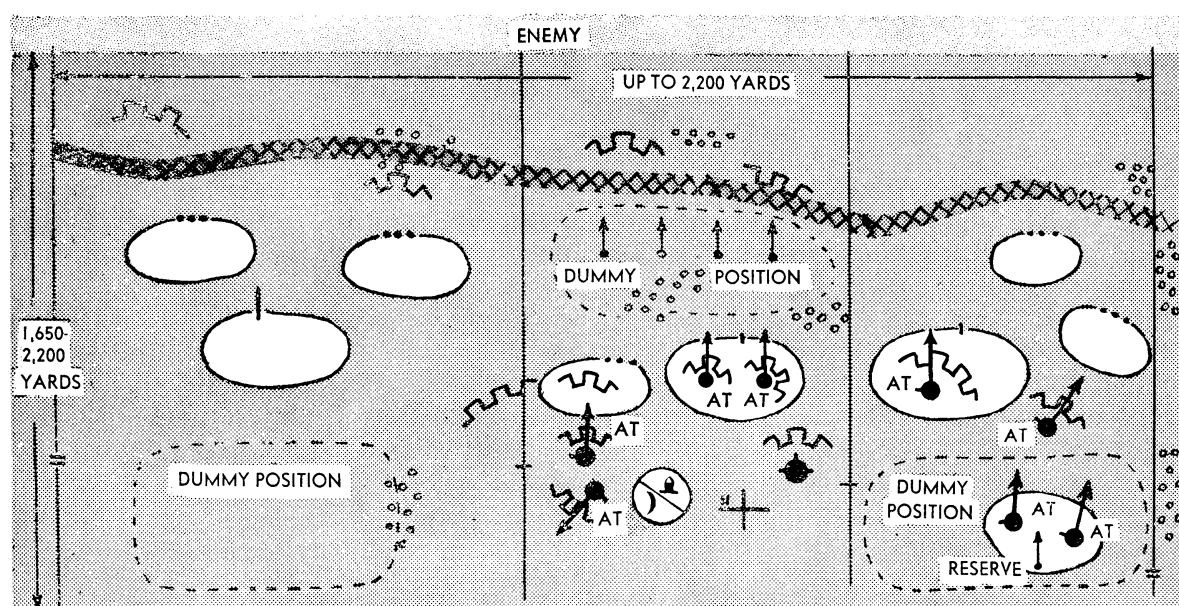


Figure 27. Reinforced battalion in defense.

sist of field and permanent fortifications connected by antitank and antipersonnel obstacles, minefields, and traps. The system of obstacles must contain gaps for use by counterattacking forces. These gaps must be arranged so that they may be quickly closed in the event of enemy penetration of the defenses. The strongpoints are manned either by specially designed garrisons or by elements of the forward battalions. In the former case, the forward battalions occupy positions defending approaches to the strongpoints and support them with fire. In defending a strong position, the regimental reserve may consist of a rifle battalion reinforced with artillery, antitank weapons, and tanks. The main line of defense may be abandoned only on orders of the commander of the next higher echelon.

boundaries of their sectors, antitank defenses for which they are responsible, plan of fire for long and intermediate ranges, and the composition and mission of the security line. The battalion commanders are told what fire support they may expect, and the probable direction and relative time of the regimental counterattack.

The regimental reserve is assigned its defense sector, probable direction of counterattacks, and a plan of fire within the defense positions (fig. 27).

ARTILLERY MISSIONS. In the defensive, regimental artillery and antitank weapons, together with allotted divisional weapons, are generally portioned out to the battalions according to the importance of their sectors. However, artillery fire is planned so that it can be shifted easily from de-

centralized to centralized control. The artillery fire is designed to support defensive operations of forward detachments. In particular, emphasis is placed on delaying enemy preparations for attack. The Soviet gunners attempt to cause casualties among enemy personnel and armor during deployment for the attack and to separate tanks from accompanying infantry, destroying the infantry with artillery and mortar fire and destroying the tanks which penetrate into the defensive positions with antitank weapons.

In organizing defensive positions, the formation of antitank centers of resistance is stressed. These centers, usually located in terrain inaccessible to tanks, consist of a rifle company with three to five antitank guns, one or two antitank rifle platoons, mortars, and heavy machine guns. Minefields are laid only on orders of the divisional commander.

The mission of the infantry is to keep enemy foot soldiers from destroying or neutralizing antitank obstacles. Antiaircraft positions are chosen in terrain inaccessible to tanks. Careful camouflage and camouflage discipline is emphasized. Defensive combat is controlled from a command post which must not be located within the artillery positions. Control of fire, timely commitment of battalion and regimental reserves, and avoidance of premature disclosure of positions and plan of defense are primary considerations in successful defensive combat. During the first stages of enemy attack, artillery fires from alternate positions.

8. WITHDRAWALS AND DELAYING ACTION

On receiving his mission, the regimental commander conducts command reconnaissance of the terrain and designates the first and subsequent defense lines. Sectors of responsibility of each battalion and of the reserve, and the composition of the supporting groups for each battalion, are determined for each defense line. The battalion commanders are given instructions concerning the relative time of their occupation and retreat from each defense line, and their responsibility for antitank defense. The reserve, approximately a battalion made up of rifle, submachine-gun, mortar, artillery, heavy-machine-gun, and antitank-rifle platoons, is instructed as to its sectors of responsibility and probable direction of counterattack from each position. The staff initiates reconnaissance in front of and on the flanks of the regimental sector, determines the axis of communications, provides for

flank and rear area security, and works out relative time schedules for the displacement of the command post and rear area installations.

Defense lines are so chosen that the enemy upon taking one line would have to displace his artillery and mortars in order to attack the next. Each successive position is strengthened with field fortifications and antitank and antipersonnel obstacles. The interval between strongpoints is covered by artillery and mortar fire. If terrain permits, ambushes are prepared in corridors between strongpoints. The location and composition of ambushes are designated by the regimental commander.

The regiment occupies two lines simultaneously: the first is occupied by the forward battalions and the second by the regimental reserve. When the enemy attacks, the forward battalions open fire at extreme ranges, forcing the enemy to deploy for battle, causing casualties, and delaying neutralization of obstacles. They do not engage the enemy, but on completing their delaying mission, retreat, covered by the fire of the reserve. The reserve counterattacks if the enemy succeeds in flanking one of the battalions or if the forward battalions are unable to disengage. The commander of the last battalion to occupy a defense line or, if the situation demands it, the regimental commander, orders demolition of bridges and roads.

Section II. ARTILLERY, MORTARS, AND ROCKETS

1. BASIC TACTICAL ROLE

Artillery is the basic striking force of the Red Army. Its mission is to neutralize and destroy the enemy system of fire throughout all operational phases, thus enabling Soviet infantry to encircle and destroy enemy personnel. To carry out this mission, the Red Army has used artillery on a much larger scale than any other modern army. In repeated offensive operations during World War II, the artillery density was 320 to 480 pieces per mile (200 to 300 pieces per kilometer). In certain operations the Soviets employed a total of more than 20,000 pieces, a number approaching the total quantity of artillery pieces used by all armies during World War I. This unprecedented mass employment of artillery required the development of large artillery units—such as artillery, mortar, and rocket divisions—to supplement organic artillery of the infantry division. To facilitate the commitment of such masses of artillery,

a highly developed system of artillery reconnaissance and artillery planning was essential.

2. TACTICAL EMPLOYMENT

The organization and tactical employment of Soviet artillery underwent continuous changes during the war. These changes were not always the result of newly formulated doctrines, but were often imposed upon the Red Army by specific strategic situations.

During the first period of the war, Soviet artillery was organized according to conventional conceptions. Only about 20 percent of the total artillery was in army artillery units (the Soviets had four artillery divisions, several independent artillery regiments, and a number of heavy artillery units), while the bulk was found organically in the rifle divisions or in corps artillery units. The major defeats suffered by the Soviet Union in 1941, which led to destruction of a great portion of its original number of artillery pieces, forced the Red Army to exploit the remaining artillery by increased centralization. Up to this time, the rifle division had two artillery regiments (one motorized and one horse-drawn regiment). The motorized artillery regiment was taken from the rifle division and organized in army artillery units. Within the rifle division, also, artillery and infantry heavy weapons were brought under centralized control.

Simultaneously with this reorganization, the production of artillery was given high priority. When newly produced weapons were made available to the Red Army, they were included in army artillery units. The great number of independent artillery regiments created a command and logistical problem, which the Red Army solved by forming larger artillery organizations such as brigades, divisions, and even corps. The great increase in the number of army artillery units also facilitated the organization of specialized units such as mortar regiments, mortar divisions, antitank divisions, antitank brigades, antiaircraft artillery divisions, and even superheavy artillery units. These new organizations were employed for the first time for large-scale operations at Stalingrad.

The steady growth of the army artillery made a reverse process possible, so that at the present time, army artillery regiments are attached to rifle divisions to increase the fire power of their direct support artillery.

a. Mortars and rockets. Mortars and rockets play a far greater tactical role in the Red Army

than in any other army. The fundamental principle of mortar employment in the Red Army is the use of massed mortar fire as an independent striking weapon. Requirements are set by the infantry commander, while technical control and coordination are the responsibility of the artillery commander. Fundamentally, Soviet mortar units employ field artillery methods. The principle of rocket employment in the Red Army prescribes mass commitment at critical phases of an operation. Rocket units are normally coordinated in the general plan of artillery and mortars, and are under the control of corps artillery.

b. Self-propelled artillery. Soviet self-propelled artillery units are found either as organic parts of armored, mechanized, or cavalry corps or as independent regiments for employment in the main effort. Soviet self-propelled artillery is equipped with telescopic sights which permit indirect fire and employment for other than assault artillery missions, such as reinforcement of regular artillery units. Soviet doctrine prescribes that self-propelled artillery should be employed in batteries or larger units; for indirect fire it is centralized in regiments or brigades. When self-propelled artillery is committed in support of infantry, it is under the control of the infantry divisional (regimental) commander.

In the attack, self-propelled artillery is employed in the main effort to support infantry, tanks, or cavalry, with the primary mission of destroying unforeseen enemy centers of resistance at short range. It may also be used as the Commander's fire reserve for action against enemy counterattacks. When attacking on the move, self-propelled artillery goes into position on a broad front without echeloning in depth. In an attack on a fortified position, it is organized in depth. During the attack, self-propelled artillery provides continuous support for infantry and tanks by displacing forward and firing from concealed positions.

In the defense, self-propelled artillery regiments, as a rule, constitute the mobile fire reserve. This reserve is employed as support for counterattacking tanks and infantry, or as an antitank reserve. During retreat, it may be attached to the rear guards.

c. Division artillery. The artillery weapons and mortars of an infantry division are found in the field artillery regiment and in the infantry regiments. The field artillery regiments have three identically organized battalions. Each battalion consists of two

batteries with 76.2-mm guns (four guns to a battery), and one 122-mm howitzer battery. The infantry regiment contains a howitzer battery with four 76.2-mm howitzers, and a heavy mortar battery with six 120-mm mortars. Each battalion also has nine 82-mm mortars. In stabilized situations, the 33 mortars of each regiment are organized, according to a definite standing operating procedure, into a provisional mortar battalion. The two 50-mm mortars of each company are for direct infantry support only. The antitank artillery pieces of an infantry division are found in the division antitank battalion and within each infantry regiment. The antitank artillery battalion has three batteries, each with four 45-mm or 57-mm antitank guns (a total of 12 pieces). The infantry regiment has four 45-mm antitank guns in its antitank battery and two 45-mm antitank guns in each infantry battalion.

Since the divisional artillery consists of only 36 artillery pieces, recent Soviet practice has been to reinforce the artillery by one to four battalions of 122-mm and 152-mm howitzers. The divisional artillery commander, however, is in control of all the artillery in the division including artillery reinforcement from higher echelons. He also exercises control of the over-all employment of the heavy mortar battery or provisional mortar battalion of each infantry regiment.

Organic artillery is employed on a regimental combat-team basis, but direct battery-infantry-battalion coordination is provided. In the regimental combat team, the field artillery battalion controls the provisional battalion that may be formed from the 120-mm mortar and the 82-mm mortar batteries.

76.2-MM GUNS. The tactical characteristics of the 76.2-mm guns (M1939 and 1942) are their high rate of fire, good muzzle velocity, and great maneuverability. These guns are employed in close support of infantry (tanks), and especially for direct fire. Their primary missions are destruction of personnel and neutralization of infantry weapons in the open; antipersonnel barrages; destruction of tanks, vehicles, embrasures, and dragon's teeth by direct fire; and harassing fire. Secondary missions are accompanying barrages and concentrations; neutralization of artillery and mortars; establishment of smoke screens; and destruction of wire. Exceptional missions are fire reconnaissance, destruction of light matériel with indirect fire, and destruction of minefields.

122-MM HOWITZERS. The characteristics of the other divisional artillery weapon, the 122-mm howitzer (M1938) which is the backbone of Soviet field artillery, are its great flexibility in muzzle velocity and trajectory, very effective burst, and good maneuverability. (A lighter model 1910/30 is employed when terrain prohibits the use of the M1938.) This weapon may be used for almost any mission except the destruction of strong positions or for distant fire. The primary missions are:

- Destruction of personnel and neutralization of infantry weapons in the open and under cover.

- Antipersonnel barrages, accompanying barrages, and concentrations.

- Destruction of light field fortifications.

- Neutralization or destruction of mortars.

- Fire reconnaissance against camouflage and minefields or in conjunction with sound ranging.

- Neutralization of artillery at medium ranges.

- Establishment of smoke screens.

- Harassing fire.

Secondary missions include antitank defensive barrages; destruction of artillery; attack on fortified houses; destruction of wire; and destruction of tanks, ordnance, embrasures, antitank escarpments, and dragon's teeth by direct fire. The destruction of minefields is an exceptional mission.

152-MM HOWITZERS. The 152-mm howitzers (M1938) differ from the 122-mm howitzers in their greater radius of burst, slightly longer range, lower rate of fire, and reduced maneuverability. Basically, they reinforce 122-mm howitzers or replace them against more resistant targets. Their primary missions are to furnish accompanying concentrations; to provide antitank defensive barrages; and to neutralize or destroy personnel, infantry weapons in the open or under cover, light and medium field fortifications (including fortified houses), antitank ditches, artillery and mortars, and minefields. Secondary missions are direct fire against very strong earth and timber fortifications; establishment of smoke screens; and reinforcement of antipersonnel and accompanying barrages. Exceptional missions are destruction of tanks and motor vehicles by direct fire, and harassing fire.

OTHER WEAPONS. The 76.2-mm howitzer is an organic weapon of the infantry regiment. Sometimes several 122-mm M10/30 howitzers are attached. Both weapons are excellent direct infantry

support weapons because of their light weight. The 45-mm guns of the infantry regiment and battalion are employed for direct fire missions at ranges of about 1,000 yards.

The 120-mm and the 82-mm mortars compare in radius of burst with the 122-mm howitzer and the 76.2-mm gun, respectively. They are emplaced primarily against personnel, in concentrations or defensive barrages.

d. Organic artillery of armored formations and cavalry corps. The organic artillery of the mechanized, tank, and cavalry corps is highly mobile and possesses great fire power. The organization of the tank corps includes three self-propelled artillery regiments, one antitank artillery regiment, one antiaircraft artillery regiment, one mortar regiment, one rocket battalion, and one antitank battalion. The three tank brigades and the motorized brigades of the tank corps have additional artillery pieces, antitank guns, and mortars. The mechanized and cavalry corps have only one or two self-propelled artillery regiments instead of three, while the other supporting components are about the same as in the tank corps.

Mobile formations are usually employed in the exploitation of a break-through to widen the gap and to pursue the enemy. Normally, they do not assist actively in the initial stage of the operation, although they may be employed for flank protection. In an extensive operation, the average distance of advance of such formations is about 200 miles. Their artillery is employed particularly for close support of infantry and tank elements, making large use of direct fire in the attack of organized positions. During the advance, the artillery is greatly decentralized. When, however, the formation establishes defensive positions far beyond the original line of departure, the artillery immediately converts to strictly centralized control. The formation possesses a sufficient amount of antitank and antiaircraft protection to enable it to hold out against enemy counterattacks until the arrival of the main forces.

e. Corps artillery. Artillery at corps level in the Red Army is of relatively less importance than in the U. S. Army, because the Red Army places greatest stress on artillery at army level. Corps artillery is normally in control of the artillery in sectors of secondary priority, while army artillery controls the artillery in the sector of main effort.

Artillery units at corps level include medium ar-

tillery brigades, antitank artillery regiments (towed tank destroyers with 76.2-mm guns), and rocket units. The weapons of the medium artillery brigade are the 122-mm guns and the 152-mm gun-howitzers.

122-MM GUNS. The 122-mm guns (M1931/37), the basic long-range weapons of Soviet field artillery, have high muzzle velocity, great penetration and range, good rate of fire, but only moderate maneuverability. (They are replaced by 107-mm guns, M1940 or 1910/30, in difficult terrain or when rapid movement is required.) The 122-mm guns are employed against distant targets and for destruction of matériel. Their primary missions are neutralization or destruction of artillery and armored trains; neutralization, interdiction, or harassment of distant targets; destruction of moderately strong permanent fortifications by flat-trajectory fire; and fire reconnaissance against distant targets. Secondary missions are destruction of tanks and vehicles by direct fire; destruction of elevated targets; and destruction or neutralization of field fortifications, mortars, infantry weapons, and infantry in the open. Exceptional missions are antipersonnel and accompanying barrages, and destruction of minefields.

152-MM GUN-HOWITZERS. The 152-mm gun-howitzers (M1931/37) have much greater range and penetration than the 152-mm howitzers, but a lower rate of fire and, except with the self-propelled KV mount, considerably less maneuverability. They are employed in conjunction with the 122-mm gun against targets beyond the range or capabilities of the 152-mm howitzer. Their most important missions are:

- Neutralization or destruction of artillery and armored trains.
- Neutralization or interdiction of distant targets.
- Destruction of strong field fortifications.
- Destruction of moderately strong permanent fortifications by flat-trajectory fire.
- Fire reconnaissance of exceptionally important or resistant targets.
- Destruction of distant minefields.

Secondary missions include destruction or neutralization of mortars, infantry weapons, and infantry in the open; and destruction of tanks, vehicles, armor, and concrete by direct fire. Reinforcement of antipersonnel fire and employment

in accompanying barrages and concentrations are exceptional missions.

ROCKET WEAPONS. Normally rocket units are not assigned to echelons lower than corps. Corps artillery control assures their centralized employment for intense, surprise shock actions during critical phases of offensive or defensive operations. Rockets are brought forward with great secrecy and are moved immediately after firing. They are committed against area targets, supplementing artillery preparations or counterpreparations, and are normally directed against enemy infantry concentrations.

f. Army artillery. The heaviest fire power of Soviet artillery is concentrated at army level. Great flexibility is the advantage of large artillery organizations. Soviet commanders are provided with the means to concentrate large artillery forces in the area of the main effort.

The artillery division of the Red Army includes in its organization a well balanced assortment of weapons which, as a rule, are employed together. The component parts of the artillery divisions are:

- One howitzer brigade with three regiments of 122-mm and 152-mm howitzers (M1938).
- One light artillery brigade with three regiments of 76.2-mm guns.
- One gun brigade with two regiments of 122-mm guns and 152-mm gun-howitzers.
- One mortar brigade with three regiments of 120-mm mortars.
- One observation battalion.

The fire power of the artillery division is reinforced as needed by additional brigades or regiments containing heavy, very heavy, or superheavy guns, howitzers, and mortar-howitzers—such as 152-mm guns, 203-mm howitzers, 280-mm mortar-howitzers, 406-mm mortar-howitzers—and other super-heavy caliber weapons.

The general characteristics of the guns are extremely great range, very high muzzle velocity and penetration, low rate of fire, and poor maneuverability. They are employed against extremely distant targets or, in conjunction with the heavy howitzers, for destruction or neutralization of exceptionally important and resistant targets. Heavy howitzers and mortar-howitzers are used by Soviet field artillery when exceptionally great blast and penetration are required. Targets for these weapons are carefully selected because of the low rate

of fire and great weight of ammunition. Typical targets are permanent fortifications (using either flat-trajectory or high-angle fire), bridges, railroads, and buildings. The mortar-howitzers are employed at moderate ranges. Normally, fire reconnaissance by lighter weapons precedes the employment of the reinforcing heavy-caliber weapons of the artillery division.

The mortar brigade of the artillery division composes the countermortar group which also may be reinforced by a 132-mm rocket regiment of 12 rocket installations or by a regiment of 122-mm howitzers.

Mortar divisions and brigades have been formed to support large-scale operations against strong enemy fortifications or powerful defenses at river lines. Mortar divisions contain rocket as well as mortar regiments. Rocket units of regimental size have also been organized. They employ mobile and stationary installations.

g. Artillery groupments. The outstanding organizational characteristic of Soviet artillery is the artillery groupments, which are the basic operating organizations of artillery. It is the responsibility of the artillery commander to form these groupments from artillery divisions, from units and elements of GHQ regiments, from infantry divisional artillery, and, to a limited extent, from regimental or even battalion mortars and cannon. These groupments are organized on the basis of a careful estimate of the special requirements for a specific operation.

TYPES. One infantry support groupment is set up for each regiment of infantry, divided into subgroupments for each battalion of infantry when three or more battalions of artillery are allotted to the groupment.

Countermortar groupments usually operate during the artillery preparation. They consist of 120-mm mortar and 122-mm howitzer units supported by sound-ranging or other instrumental reconnaissance elements. At the conclusion of their mission, the component elements are often attached to infantry support groupments.

Artillery destruction groupments normally consist of fire reconnaissance and destruction subgroupments. These groupments are often operative only during the preparation phase. The fire reconnaissance subgroupment and light guns from the destruction subgroupment are then attached to infantry support groupments, while heavy and very heavy artillery either reverts to the army artillery com-

mander or is attached to the counterbattery or distant operations groupments.

Counterbattery groupments are maintained throughout the operation against deep defenses. When large quantities of artillery are available, separate distant-operations groupments are also formed.

Antiaircraft groupments initially protect the entire artillery and infantry deployment area. (An antiaircraft artillery division usually operates as the basis of such a groupment.) Upon displacement by light artillery and mortars, elements of the groupment are detached and placed under forward artillery or infantry control. Medium and heavy antiaircraft artillery remains in place to protect army artillery groupments and rear installations.

Roving batteries operate during the advance guard and screening phases of the operation only. They are then attached to infantry-support groupments.

Accompanying guns (direct fire weapons) are generally allotted and sited during the night preceding the artillery preparation. If they are allotted to artillery destruction groupments, they begin operations during the destruction phase of the artillery preparation. If they are allotted to infantry units (down to companies), they begin operations at the end of the preparation.

The number of groupments and subgroupments depends upon the expected difficulty and duration of the operation, the quantity of artillery, the width and the depth of the zone of operations, and possibilities for observation. A groupment may vary from one to nine battalions in size; a subgroupment from a battery to three battalions. A groupment or subgroupment must be provided with adequate fire control, signal communications, observation, and transport to execute its mission. The sector of fire varies with the range; it is usually divided into a primary and an emergency sector.

CONTROL. Groupments and subgroupments may be controlled by the army artillery commander, by an artillery division, by an infantry corps artillery commander, by an infantry division artillery commander, by a regimental artillery commander, or by an infantry commander (from corps to company). Control is determined by the phase of the operation, the scheme of maneuver, the width and depth of the firing sector of each groupment, and its position area.

In general, the divisional or regimental artillery commanders control artillery during the advance guard and covering phase. During *preparation*, control is highly centralized. The army (army group) artillery commander personally supervises fire against the most critical targets, regardless of their character. The artillery divisions control counterbattery, distant operations, antiaircraft, antitank, and sometimes countermortar and artillery destruction groupments. The divisional artillery commanders control infantry support and, normally, countermortar and artillery destruction groupments, as well as roving batteries and accompanying guns. Furthermore, the artillery commander at each level sets aside a portion of fire of one or more artillery units as command reserve for critical emergencies.

With the *assault*, control of accompanying guns and infantry support groupments passes to the infantry artillery divisions, to insure their most effective employment.

During *reorganization*, when the security of the assaulting troops is a paramount problem, the regimental and divisional artillery commanders control artillery in advanced positions, while the army artillery commander continues command of the artillery division.

In *exploitation*, control is increasingly assumed by infantry commanders, and artillery is decentralized to small units (even battalions or companies). Long-range artillery, however, remains under centralized control to give distant support to mobile troops.

The degree of centralized control varies with the tactical importance of each sector. In the zone of the main effort, the army artillery and artillery division commanders have primary responsibilities; in secondary sectors, the corps or the divisional artillery commanders. In operations on a wide front, the reinforcing artillery of secondary sectors may be controlled by infantry corps.

The width and the depth of the firing sector, and the position area of each groupment are determined by its mission. A countermortar groupment, for example, may operate on the front of two infantry divisions. An artillery destruction groupment may fire from firing positions of one division at targets in the sector of another. In such instances, control is assumed by the next higher echelon, corps or army, with subgroupments allotted to each division.

3. ARTILLERY AND AIR OFFENSIVE

a. Basic doctrine. The large-scale offensive use of artillery crystallized in 1942 into a Soviet tactical doctrine, "the artillery and air offensive." The fundamental element of this doctrine is the responsibility of the highest artillery commander, through the artillery chain of command, for the organization and execution of a unified system of fire preparation, support, and security for infantry maneuver. The operations of tactical air bombardment and other supporting fire power are coordinated with the basic artillery responsibility. The success of the doctrine can be judged from repeated operational examples: Orel, the crossing of the Dneiper River, Novogorod, the Karelian Isthmus, the Perekop Isthmus, and Sevastopol.

Most important in the execution of the artillery and air offensive are the following features:

INTELLIGENCE. A comprehensive intelligence system includes a thorough standing operating procedure for troop reconnaissance by batteries and battalions, and aggressive action by infantry and artillery patrols to push observation as far forward as needed. Specialized types of instrumental and air reconnaissance augment the results of troop reconnaissance. Extensive documentation and systematic analysis of information are required. Operational recommendations from lower echelons are combined directly with their intelligence reports. Higher echelons, particularly army, must disseminate all necessary intelligence directly and promptly to every operating level down to batteries.

PLANNING. Continuous comprehensive planning of fire is based upon a thoroughly developed firing technique. The requirements of fire against personnel, tanks and ordnance, field fortifications, permanent fortifications, minefields, wire and dragon's teeth, elevated targets, bridges, railroads, and highways have been well determined. Initial standards for the neutralization, destruction, interdiction, harassing, and fire reconnaissance of targets have been established. Beyond this, great attention is paid to secrecy and surprise, maneuver of fire, aggressive displacement, and variation of tactics. Planning develops from the combined scheme of maneuver and the detailed analysis of enemy capabilities by operational phases of time and space, starting with the initial concentration of forces through the destruction of the enemy defensive system and culminating with the exploitation in his deep rear. Neutralization of enemy capabilities

must be effected within the time allotted, and with maximum economy of personnel, matériel, and ammunition.

After careful calculation of the requirements, the fire power, transportation, and signal systems of the entire task force (army, front or group of fronts) are reorganized accordingly. Flexibility to meet surprises or to exploit unexpected successes is provided by systematic duplication of material in critical areas (for example, radio duplicated by wire, mortars duplicated by rockets), and by allotment of reserves. Centralized reserves under the immediate control of the senior artillery commander are employed in mass for decisive results. Local reserves, particularly of ammunition, insure security.

COORDINATION. Coordination of time, space, and command is the basic concern of every artillery echelon. The following are mandatory: personal contact, exchange of liaison officers, multiple communications, unified code, and terrain reference systems within and between artillery units and with supported or cooperating arms. Survey is always initiated at the earliest possible moment; full survey is prescribed for all units in the main effort. Command and organizational groupments are changed as required with every new operational phase to support the infantry most closely and effectively.

b. Fire plan. Accurate, unceasing planning of fire is a mandatory function of artillery regimental and higher staffs. Advance planning, with suitable modifications during combat, alone can insure continuous, reliable, and close support of infantry (or tanks), as well as economy of ammunition and ordnance.

REQUIREMENTS. Primary responsibility for artillery fire plans rests with the highest artillery commander engaged in the operation (army, army group, or GHQ). The plan, based on the infantry (or tank) scheme of maneuver, must embrace the entire contemplated operation from advance guard action to completion of exploitation.

A correct plan is dependent upon continuously developing intelligence. Needed intelligence includes:

The forward line of enemy defenses, which determines the location of observation points and firing positions.

The grouping of enemy reserves, which determines the measures taken for their di-

rect neutralization and for the interdiction of routes of communication.

The locations, numbers, and types of enemy artillery and mortars, which determine the composition, firing positions, and missions of counterbattery and countermortar groupments.

Detailed analysis of the enemy defensive system in the zone of main effort comprising the location of strongpoints and of firing and communications trenches.

Fields and densities of fire of automatic weapons, mortars, and infantry guns.

These factors determine the composition, firing positions, and missions of the infantry-support and artillery destruction groupments, as well as the allotment of weapons to infantry units. Basic factors of terrain, vegetation, and weather determine the systems of observation and fire control, and the capabilities of artillery displacement.

COORDINATION. The plan is initiated with the first warning order. It is continuously coordinated with the staff of combined arms, and with the staffs of other arms, to insure a common time and space schedule, a common system of essential signals and signal communication, maximum exploitation of tactical capabilities, joint combat security, and joint camouflage discipline. It is checked to the greatest practical degree by personal reconnaissance of the artillery commander and the commander of combined arms. It must be disseminated to lower echelons, in preliminary form, as early as possible; in final form, simultaneously with the field order.

The estimate of artillery fire allows for the neutralization of all probable enemy capabilities. Duplicate equipment must be provided for execution of the most important missions. Safety factors and reserves of ammunition and ordnance for unforeseen contingencies must be generous. Artillery must not hesitate to ask for fire by air, by mortars and rockets, by infantry, or by other weapons when more rapid, economical, and certain results can be achieved thereby.

The fire plan must provide maximum surprise and deception. Sudden concentrations, false transfers of fire, irregular periods of neutralization or interdiction, and employment of alternate firing positions or roving batteries—all are important methods which must be utilized to surprise and shock the enemy.

Soviet doctrine emphasizes the necessity for large-scale artillery support in offensive operations. An artillery groupment must be formed or activated for the execution of each major artillery mission, usually bringing the proportion of artillery to infantry to 2 to 1. Certain groupments are maintained throughout the operation; others, through one or more phases only.

USE OF THE PLAN. The artillery plan computes the necessary densities of fire and the capabilities of friendly artillery. In addition, it recommends army (front) and subordinate artillery groupments as well as the position areas and missions of army (front) artillery, and the missions of lower echelons of artillery. The plan computes the time necessary for artillery preparation and ammunition requirements; and it determines the time when the artillery will be ready for combat and the most effective methods for the support of infantry and tanks.

With the aid of this plan, the Commander of Combined Arms prescribes the following:

- Attachment of army (army group) artillery to lower formations.

- Composition of army (army group) groupments.

- Priorities and system of deployment.

- Time and duration of artillery preparation, infantry assault, and reorganization of assaulting forces.

- Parallel regrouping of artillery.

- Allotment of ammunition.

The Commander of Combined Arms checks the position areas or firing positions of army (army group) artillery groupments and assigns missions of the following types: counterbattery; neutralization of deep reserves; neutralization or destruction of supply installations; accompanying barrages and concentrations in the zone of the main effort; and destruction of strong permanent fortifications.

Control of the initial fire plan during combat is indispensable. The execution and effectiveness of firing missions must be continuously reported by lower echelons and checked by responsible staff officers. Estimates must be corrected to conform with actual expenditures of ammunition and ordnance. Groupments and missions must be modified with changes in enemy and friendly capabilities, with movement, with increasing intelligence, and with changes in weather and observation. *The objective of artillery at all times must be to anticipate the immediate requirements of the supported troops.*

DEVELOPMENT AND EXECUTION. The development and execution of fire plans is accomplished in six steps: The combined scheme of maneuver; analysis of targets and enemy capabilities; determination of objectives of fire; computation of artillery fire requirements; formation (or activation) of groupments and assignment of batteries, position areas, and mission; and control of operations.

The scheme of maneuver is normally divided into five phases of time and space: advance guard (covering forces) action and assembly of main forces; fire preparation; infantry (or tank) assault; reorganization and security of assaulting forces; and exploitation.

Known targets and suspected areas are plotted. Enemy capabilities of movement and employment of fixed installations, both for the known and the probable order of battle, are then calculated. The objectives of artillery fire against each group of targets in time and space are then prescribed.

During the first phase (advance guard action and assembly of main forces) normal objectives are neutralization of enemy artillery, interdiction of enemy attack, and fire reconnaissance.

During the fire preparation phase (subperiods: neutralization; registration, fire reconnaissance, and destruction; and neutralization) the normal objectives are:

- Neutralization and destruction of enemy field and antiaircraft artillery.
- Neutralization and destruction of enemy mortars.
- Neutralization of observation and command posts, local reserves, and important centers of resistance in enemy rear areas.
- Interdiction of main enemy routes of communication and fire reconnaissance.
- Destruction of the most important fortifications, especially permanent ones of concrete and steel.
- Break-through of gaps in obstacle systems (in conjunction with engineers and tanks).
- Destruction of located flanking, firing points (machine guns and infantry and antitank guns) and neutralization of the automatic weapons defensive system.

Support of the infantry assault requires the following of artillery:

- Continued neutralization of enemy artillery.
- Interdiction of main enemy routes of communication.

Destruction of antitank guns, machine guns, and field fortifications in the zone of advance (especially by direct fire of accompanying weapons).

Neutralization of observation and command posts, local reserves, and important centers of resistance in enemy rear areas.

Accompaniment of infantry and tanks by fire and displacement.

Interdiction of enemy counterattacks.

Normal artillery objectives during the fourth phase (reorganization and security of assault forces) include neutralization of undamaged, newly found, and revived enemy batteries and centers of resistance; interdiction of enemy counterattacks and of the movement of tactical reserves; neutralization of rear installations.

The artillery's tasks during exploitation include support of mobile forces by displacement of light artillery and by long-distance fire from heavy artillery; destruction of remaining enemy centers of resistance; interdiction of enemy counterattacks, and movement of tactical or strategic reserves.

Computation of artillery fire requirements involves two problems: the expenditure of ammunition, and the types and quantities of artillery. Ammunition expenditures include the total required for all targets (with a safety factor in some cases); duplication of the most important missions; a command reserve for each echelon (to be utilized only by permission of the next higher commander); and an unallotted reserve. Requirements for each target are determined by: the nature and the size of the target; the accuracy of target location, registration, and survey; the range; and the objective of fire. (In neutralization and interdiction, the duration of fire is also a factor.) The range and the objective of fire are basic factors in the choice of weapons. The time allowed for the mission governs the needed quantity of artillery.

EXAMPLES. Figures 28 and 29 present an example of an artillery fire plan in the offensive in a secondary sector. Thus, corps rather than army, is in control. The field fortifications encountered require only a brief period of destruction fire.

Characteristic of the operation are the alternation of concentrations, destruction fire, and repeated false transfers. The duration of the preparation is 1 hour and 55 minutes. The plan for the artillery commitment after the assault phase is not detailed in this instance, but is of the general mission type.

PHASES OF ARTILLERY ATTACK	GROUPS AND MISSIONS							
	TIME IN MINUTES	INFANTRY WEAPONS	DIRECT FIRE ARTILLERY	ARTILLERY AND MORTARS (DIVISIONAL)	CORPS ARTILLERY	CORPS COUNTER-MORTAR GROUP	CORPS ROCKET GROUP	ARMY LONG-RANGE SUB-GROUPMENT
I. ARTILLERY PREPARATION:								
a. First concentration.	5	At emplacements in first trenchline (A-A).		On first trench-line (A-A) and on communication trenches to second trench-line (B-B).	On second and third trench-line (B-B, C-C); on an identified strongpoint in forward position (concentration 120); on communication trenches from second to third trench-line; and on CPs in forward position.	On mortar batteries identified in the forward position.	On an identified strongpoint in forward position (the same target as for corps artillery—concentration 120) <i>Fire: one battalion concentration.</i>	On identified artillery batteries behind the rear position; on reserves in the enemy's rear. (Nos. 390, 302, 320, 321, 322, 333, 331, 352, 353.)
b. Destruction.	50			Divisional missions.	On selected trench sectors in the second and third trench-lines (B-B, C-C).	Methodical fire on neutralized batteries; destruction fire on active mortars.		Methodical fire on neutralized batteries and neutralization of active batteries.
c. Second concentration.	5	As in a.		As in a.	On first trench-line in rear position (D-D) and on an identified strongpoint in the rear position (concentration 201).	On active mortar batteries.		On active batteries and signal centers.
d. First false transfer.	5	As in a.	As directed.	On first trench-line of rear position (D-D) and on communication trenches to second trench-line (E-E).	Third trench-line of forward position (C-C) and on communication trenches from second to third trench-line.	As in a.	On an identified strongpoint in forward position (coordinates 38-49) <i>Fire: One regimental concentration.</i>	As in a. (Excluding 300 and 302.
e. Direct fire.	15		Division plan.	Methodical fire on destroyed trench sectors in second* line of trenches and deeper.				Neutralization of active batteries.
f. Third concentration.	10			As in a.	On target coordinate 38-49 strongpoint (concentration 120) on third trench-line of forward position (C-C).	As in c.		On active batteries and signal centers.
g. Second false transfer.	10		As directed.		On second and third trench-line of forward position (B-B, C-C) and on communication trenches from second to third trench-line.	As in a.	As in d. <i>Fire: On battalion concentration.</i>	On revived batteries and reserves near Height 191 (rear position) (concentration 200).
h. Fourth concentration.	15	As in a.	On previously destroyed targets.	As in a.	As in a.	As in c.		On active batteries and reserves concentration 120.
II. ASSAULT	"H"			Support assault with double accompanying barrages.		As in Ic.	As in Id.	On active batteries.
III. COMBAT SECURITY PHASE:				Transfer to first phase line.	Transfer to second phase line under divisional artillery control.			
				Further transfer to phase line (coordinates 37-49—36-51 under division control.				
				Prepared to neutralize enemy in area 191.2 and 35-49 with four battalions.	Prepared to neutralize enemy with concentrations 200, 201. Interdict counterattacks with anti-personnel barrages M and N Interdict retreat from strongpoint Kamen (in rear position).	Special attention to southern reverse slopes. Height 191.2.	Prepared for full concentration on Height 191.3 and Kamen.	Neutralization of active batteries. Interdict approach of reserves from direction Height 193.4—Ustinovka.
b. When infantry passes phase line Ivanorka Maryvka.					Prepared to neutralize enemy areas, with concentrations 215 and 216. Interdict counterattack with anti-personnel barrages N and O. Cover commitment of second infantry division.	Neutralize active mortar batteries special attention to Height 193.4.	Prepared for regimental concentration.	

*Methodical fire is conducted for continuous neutralization and to prevent reoccupation of previously destroyed positions. Normally it is observed fire.

Figure 28. Extract from the plan for artillery offensive of the 1st Rifle Corps.

The plan covers the commitment of the following weapons, units, and formations in the corps sector with an approximate width of 1.5 miles: infantry weapons, mortars, and an organic field artillery regiment plus one howitzer regiment under division

control; a medium gun brigade, a mortar regiment, a rocket regiment and probably one antitank regiment under corps control; and part of a heavy gun brigade and part of an antiaircraft artillery division under army control.

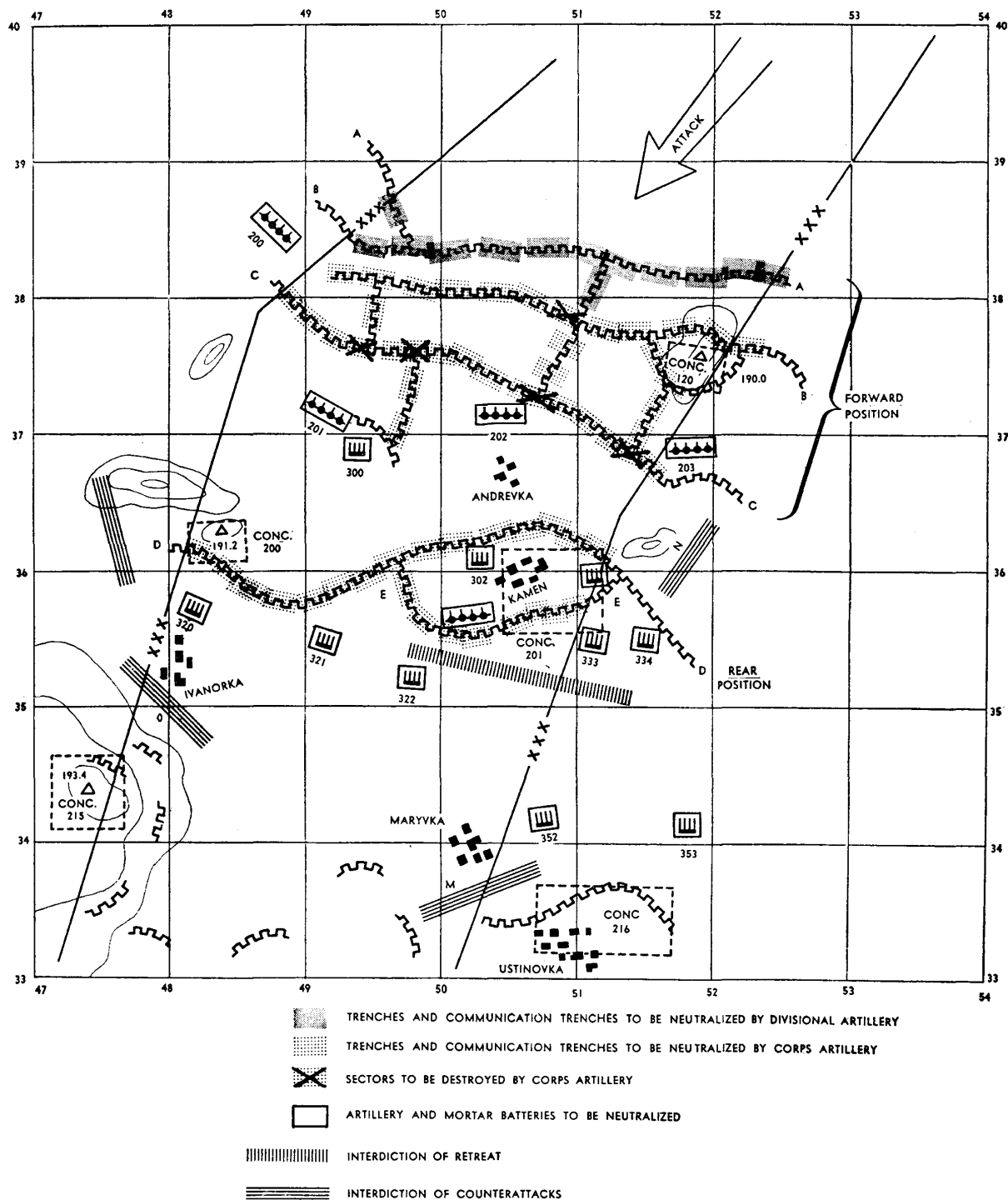


Figure 29. Plan of artillery fire for artillery offensive of 1st Rifle Corps.

Figures 30 and 31 are examples of the fire plan of a regimental infantry-support groupment in offensive operation in a moderately defended enemy sector. The infantry-support groupment in both examples comprised three artillery battalions (one battalion from the divisional artillery and two attached battalions) and a provisional mortar battalion temporarily organized from the infantry, regimental, and battalion mortar batteries.

Examples A and B present different methods employed by the infantry support groupment. In Example A, the artillery fires accompanying barrages which cover the entire width of the sector during the assault phase, while in Example B, the artillery supports the assault with accompanying concentrations on definite targets in each phase line.

c. Characteristics of artillery in the offensive. The location of firing positions is determined about 10 days before the attack by the comprehensive reconnaissance of assault unit and artillery commanders. About 2 to 3 days before the attack, the reinforcing artillery moves into prepared firing positions under the cover of night and noise created by mortar fire and planes. The newly arrived artillery immediately starts registration fire with single pieces from dummy and roving gun positions, making extensive use of the firing data available from the artillery already active in the sector.

As a rule, every battery has a main firing position and an alternate position to the front or rear of it. The main firing position is usually sufficiently far forward to facilitate effective fire into the depth of the enemy position. For the destruction or neutralization of individual strongpoints, firing positions are located far forward and prepared for single direct-fire artillery pieces. The most effective ranges for direct fire during short and intensive artillery preparations are 440 to 880 yards for 45-mm guns, 1,100 to 1,320 yards for 76.2-mm guns, and 1,650 to 2,200 yards for 122-mm and 152-mm artillery pieces.

The army or army group artillery commander controls registration when a large amount of artillery is committed. Plans for registration and deceptive registration are developed to assure secrecy.

During the course of the attack, Soviet artillery displaces forward as soon as the enemy main line of resistance is reached by friendly infantry, always keeping two-thirds of the artillery in firing position while the other third is on the move.

4. ARTILLERY IN DEFENSE

a. Basic doctrine. The Red Army considers its artillery as the main weapon of the defense. As previously described, Soviet tactics distinguish two basic systems of defense: decentralized and centralized. The artillery in decentralized defense is broken up, and its components are under the control of the individual strongpoint commanders. In the centralized system, the artillery remains under the control of the artillery commander.

The artillery missions, however, are the same for both defense systems:

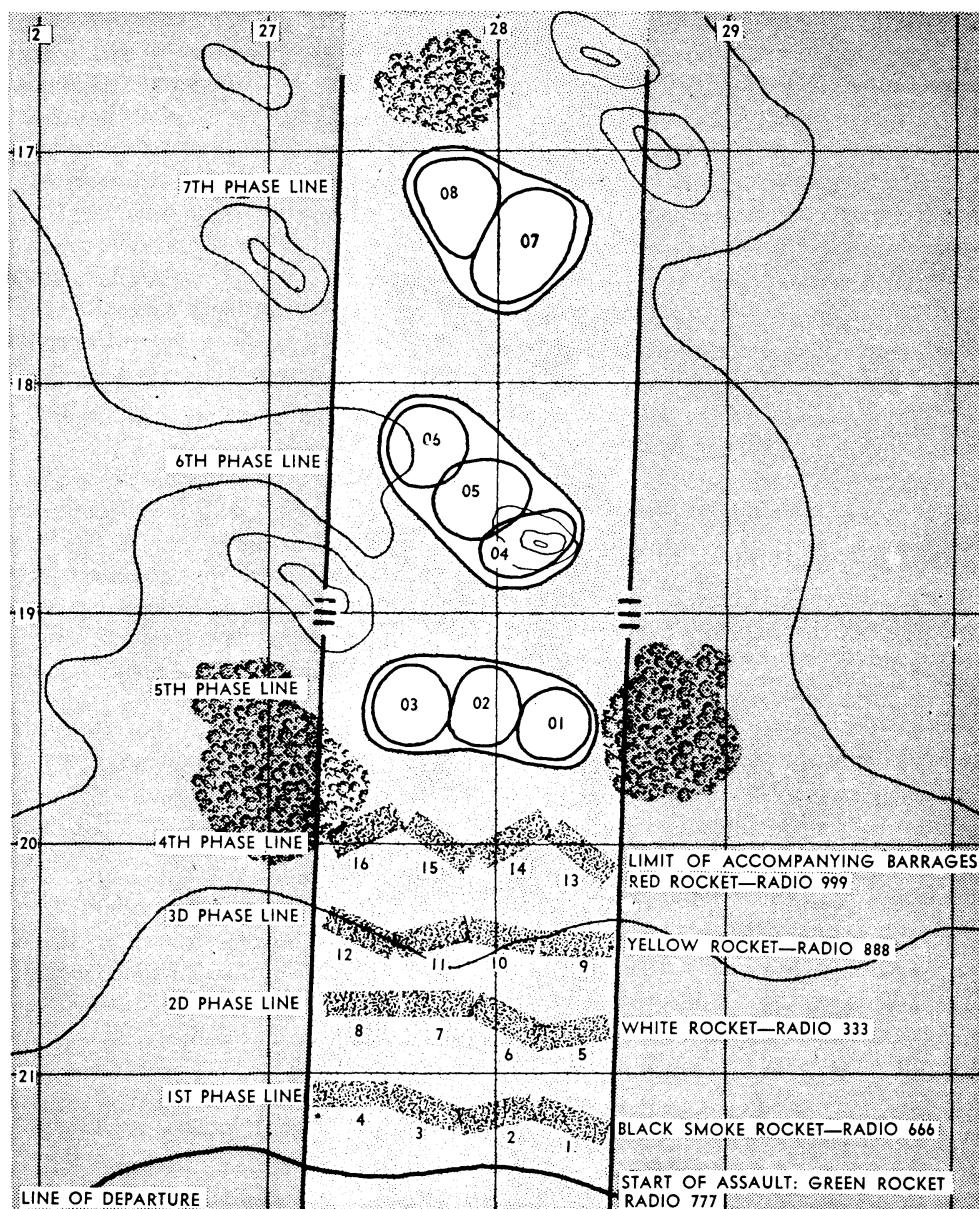
- Fire against enemy march columns and troop concentrations.
- Support of the units in the forward positions.
- Interference with the deployment of the attacking enemy.
- Counterbattery and countermortar fire.
- Firing of smoke against enemy observation posts.
- Annihilation of the enemy infantry and tank attacks in front of the main line of resistance.
- Destruction of tanks which have penetrated through Soviet lines.
- Preparation fire for counterthrusts and counterattacks.

b. Concentration of artillery for defensive operations. Soviet artillery in the defensive is usually organized to facilitate the massing of fire in definite areas. For this purpose, artillery in a corps sector is normally divided into infantry-support groupments and artillery groupments for long-range counterbattery and countermortar missions.

Soviet tactical doctrine also prescribes the establishment of three firing positions for each battery, and emphasizes that the positions must be selected so that the bulk of the artillery can participate in the fire against enemy tanks which have penetrated the defenses. Emphasis is laid on the construction of alternate and dummy positions and the employment of roving guns and silent batteries to deceive the enemy as to the location of the real positions and artillery strength. The weapons are brought into position only when firing; the rest of the time they are kept to the rear in well camouflaged dugouts.

The artillery commander also develops a fire plan for each sector, considering all possible combat phases, including:

- Concentration by long-range artillery upon enemy artillery positions, approach routes,



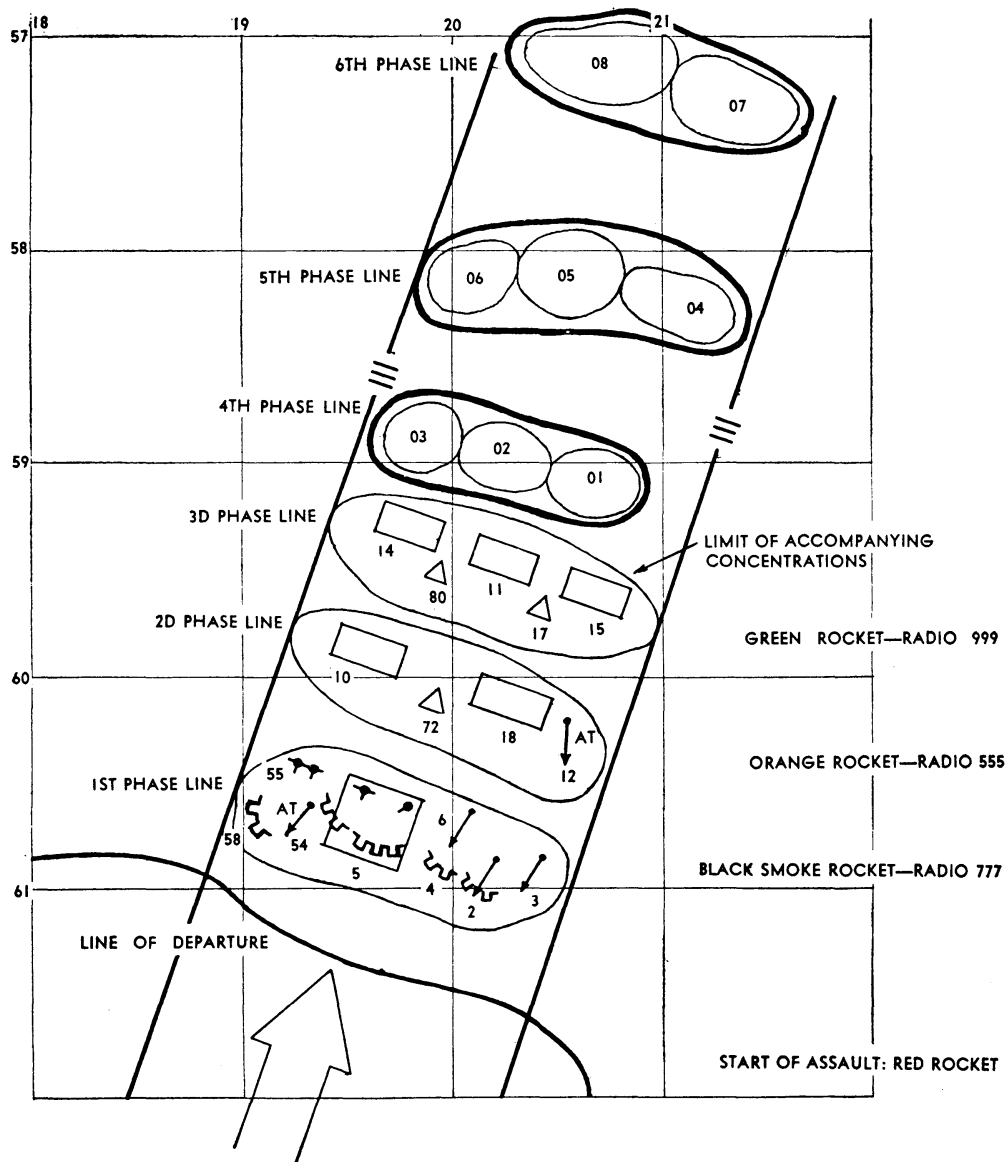
		ACCOMPANYING BARRAGES				CONCENTRATION AREAS IN DEPTH OF ENEMY POSITIONS		
INFANTRY SUPPORT GROUPMENT		1	5	9	13	01	04	
		2	6	10	14	02	05	07
		3	7	11	15	03	06	08
		4	8	12	16	—	—	—

ACCOMPANYING BARRAGES DURING THE ASSAULT PHASE
 CONCENTRATION AREAS IN THE DEPTH OF THE ENEMY POSITION

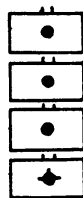
Figure 30. Fire chart of regimental infantry support groupment during assault phase and the subsequent concentrations in the depth of the enemy position (example A).

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INFANTRY
SUPPORT
GROUPMENT



ACCOMPANYING CONCENTRATIONS					CONCENTRATION AREAS IN DEPTH OF ENEMY POSITION		
2	4	18	80	14	02	05	
5	54	12	17		01	04	07
55	58	72	15		03	06	08
3	6	10	11				



ACCOMPANYING CONCENTRATIONS DURING THE ASSAULT PHASE

CONCENTRATION AREAS IN THE DEPTH OF THE ENEMY POSITION

Figure 31. Fire chart of regimental infantry support groupment during assault phase and the subsequent concentrations in the depth of the enemy position (example B).

road crossings, and other important installations in the enemy rear.

Massed fire at enemy assembly areas, command posts, and observation posts.

The Red Army employs stationary antipersonnel and moving antitank defensive barrages. Antipersonnel barrages are the rule in the defense. All types of artillery weapons, mortars, and rockets are

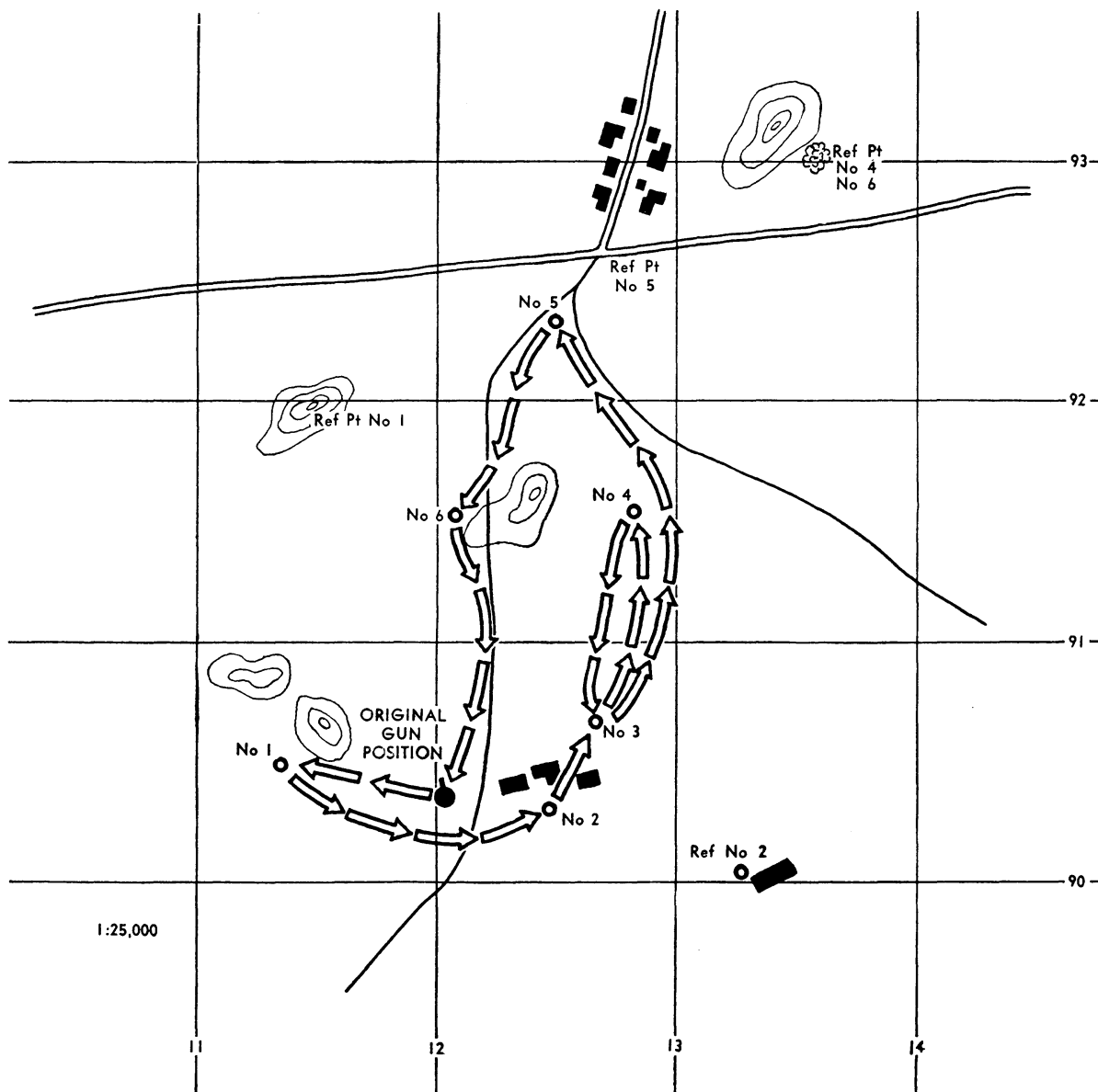


Figure 32. Map for the chief of section of the roving gun.

Box barrages against enemy tanks and large troop concentrations.

Direct fire against tanks which have penetrated.

Barrages in front of the main line of resistance and in the depth of the friendly main battle position.

coordinated for these barrages, which normally are about 330 yards in front of the friendly main line of resistance. The areas covered by the barrages are usually identified with names. Each artillery battalion is supposed to have not more than four barrage areas, about 440 yards wide and overlapping the barrage areas of adjacent artillery battal-

ions. Antitank barrages follow the enemy along his axis of approach to the friendly main line of resistance; however, these barrages find only limited employment due to gunnery difficulties.

The Red Army places great emphasis on the employment of roving guns in the defensive. They deceive the enemy as to the quantity and grouping of the friendly artillery and thereby force the enemy to disperse the fire of his supporting weapons.

Plans for the employment of roving guns are carefully worked out by the battalion commander of the firing platoon to achieve maximum effects. These plans include the march route of the gun, positions to be occupied and the reference points, firing positions to be used for effect, and deceptive firing positions. With the assistance of the topographical computation platoon of the battalion, the battalion commander also prepares a chart which contains: a description of the observation points and reference points; a description of the march route; target designation and firing data; and the number of rounds to be expended for each target and firing position. The firing platoon also is furnished with a small map which contains the march route, the firing positions (which are staked previously on the ground for easier identification), and the reference points (fig. 32).

c. Artillery counterattack. Soviet doctrine speaks of an "artillery counterattack," thus emphasizing the offensive character of the artillery in the defensive. The mission of the artillery is to crush an enemy attack in its initial phase. The artillery counterattack, controlled by a carefully prepared fire plan, commences when the enemy moves into his assembly position and begins his attack preparations. Soviet artillery relies on the observation battalions for firing data, to obtain complete surprise and abstain from using registration fire. The organization of artillery in the centralized defense facilitates the conduct of the artillery counterattack.

d. Artillery in delaying action and retreat. In delaying actions and retreats, the artillery is organized in depth. Firing positions and ammunition reserves are prepared in the rear to facilitate speedy retrograde displacement and to permit relatively large expenditure of ammunition by the covering forces. Single motorized batteries or battalions are subordinated to the rear guard covering the retreat of the infantry. Soviet artillery opens fire at great ranges to delay and disorganize the advancing enemy.

5. ATTACK OF TARGETS

The effectiveness of artillery fire, according to Red Army doctrines, depends upon correct determination of the nature and location of the target, correct choice of the objective of fire, and the mode of attack (including weapons, ammunition, fuze, charge, angle of impact, firing pattern, and expenditure of ammunition).

Accuracy of registration and constant correction of fire, as well as continuous, accurate planning are additional factors.

Surprise is of maximum importance in fire against personnel; prior adjustment directly on the target is permissible only in exceptional cases. Short bursts of sudden, massed fire at maximum rates produce the greatest physical and psychological effects. Methodical fire, with the observation and adjustment of each round, is most effective in the destruction of matériel.

Tabulated standards for neutralization or destruction of targets are only guides. In the destruction of point targets, direct fire is most rapid and economical; no expenditure of ammunition can replace accuracy in destruction fire. Direct fire, however, demands extremely careful preparation and camouflage to prevent excessive losses of personnel and matériel. All types of fire for effect must be employed until the required tactical results have been achieved.

The rate of fire should not exceed the technical capabilities of each weapon as designated in standard tables. With reduced charges in prolonged fire, increases up to 50 percent are permissible. The rate of fire must not be increased at the expense of accuracy. After prolonged or intense fighting, corrections for heating and other ballistic changes are essential.

a. Types of targets. From the standpoint of artillery fire, enemy operations and installations may be divided into seven general components, excluding aircraft: personnel (or animals); tanks, motor vehicles, and other ordnance; field fortifications, tank ditches, houses, and other structures of moderate strength; permanent fortifications and structures of great strength; minefields; wire, dragon's teeth, and similar resistant, small, but immobile, targets; and elevated targets, such as observation posts in high trees and observation balloons.

PERSONNEL. Personnel are the primary or secondary targets of all artillery fire. Fragmentation and incendiary projectiles are most effective against

personnel in the open; heavy blast can often neutralize or destroy personnel under cover even in the absence of direct hits. Light and medium artillery may be usefully employed against personnel, although mortars and rockets of similar calibers are more effective. Surprise and quick action are mandatory.

Against moving infantry, cavalry, or motorized troops, shrapnel and high explosive shells with superquick, delayed (to produce ricochet), and time fuzes are employed. Fire is usually by battery, with a normal or concentrated sheaf, in rapid bursts of four to six volleys, at each sight adjustment. Whenever possible, fire is delayed until the approach of troops to a registered phase line. Concentrated fire begins with their arrival on the line of shorts. Against large or rapidly moving masses of infantry, zone fire by all available artillery produces decisive results. At long ranges, such fire should be adjusted by aerial observation whenever possible.

Against infantry in the open or troops in shallow trenches, ricochet fire, and fire with superquick fuze and minimum charge are most effective. HE with time or superquick fuze is employed against reverse slopes. In very broken terrain, high-angle fire is used with delayed fuze to get maximum vertical dispersion. The sheaf must be normal or concentrated to correspond to the width of the target. Bursts of three to six volleys alternate with methodical fire.

Several methods of fire may be employed against personnel in field fortifications. Small groups of observed or unobserved, but accurately located, targets may be grouped into target areas not exceeding 72,000 to 96,000 square yards, which are brought under fire by sudden concentrations of medium or heavy artillery (at least one battalion per 240 square yards) employing suitable zone fire, with HE and incendiary ammunition, quick fuze, and minimum charge. When targets are inaccurately located, the probable error in range and dispersion must be determined.

If the target is large, such as a battery position or a supply installation, fire is distributed uniformly. If the target is small, distribution of fire corresponds to the law of probabilities, with the heaviest concentration in the center of the area.

TANKS AND OTHER ORDNANCE. Projectiles which result in penetration, incendiary action, and strong blast are effective against tanks and other ordnance. Accompanying exposed personnel must always be

attacked simultaneously—by fragmentation fire from other weapons, if necessary.

Distant firing missions against tanks, motor vehicles, artillery, and similar matériel are executed by the concentrated fire of medium or heavy guns, or heavy howitzers. Aerial observation and control, or precise registration, are essential to prevent excessive waste of ammunition. HE with superquick fuze, or concrete-piercing ammunition, are combined with incendiary shells for optimum results. Fire proceeds at maximum rates in bursts of 2 or 3 minutes, interrupted by periods of methodical fire and adjustment.

Firing missions against moving tanks at medium ranges (antitank defensive barrages) must be previously organized, with one or two battalions of medium artillery assigned to each probable tank approach, and with light artillery and mortars prepared to fire upon accompanying infantry. Phase lines are registered along these approaches at intervals of 330 to 440 yards, depending on the probable speed of the tanks. HE superquick-fuze ammunition is allotted and prepared at firing positions. As the head of the enemy tank column reaches each phase line, concentrated fire at maximum rates is conducted for 2 or 3 minutes. As soon as the main tank group has passed the point of concentration, fire is then laid down upon the next phase line. Antipersonnel fire may be continued on the first phase line to isolate the tanks from their infantry. The last phase line is within direct fire range.

The Red Army considers training in direct fire against tanks essential for all light and medium artillery. In massed tank attacks, fire must be opened at a maximum direct-fire range of 1,100 to 1,650 yards. To destroy single tanks or small units, the most effective ranges are 330 to 770 yards, depending on muzzle velocity. Maximum charges, with armor-piercing or concrete-piercing ammunition, are employed. In the absence of AP ammunition, HE with quick or superquick fuze may be used, especially against tankettes, armored cars, and other lightly armored vehicles.

FIELD FORTIFICATIONS. Field fortifications, tank ditches, houses, and similar structures present a variety of firing problems. Some of the more important variables to be considered are: hardness and texture of the ground; drainage and vegetation; presence of timber, brick, steel rails, or other reinforcements; surface and subsurface profiles; nature and degree of overhead cover; and the degree

of compartmentation. Hasty defenses may sometimes be destroyed by light artillery and mortars, while developed systems often require prolonged operations by heavy artillery and direct cannon fire even for effective neutralization. The peculiarities in each case must be established by the most thorough reconnaissance possible.

Fire upon field fortifications is best initiated by surprise concentrations of medium howitzers, mortars, and rockets (high-angle fire, HE and incendiary shells, quick and superquick fuzes). In addition to the physical and psychological effects against personnel, such concentrations serve to remove camouflage, exposing armor or concrete, and reveal dummy positions or weak spots. Soviet artillery then initiates destruction fire. Compact groups of light fortifications may often be destroyed by several repeated concentrations, carefully observed and adjusted.

The destruction of strong and extensive field fortifications in this manner, however, is rarely feasible. In firing upon such systems, comprehensive reconnaissance must establish, as far as possible, the coordinated tactical grouping of the fortifications, differentiating occupied and alternate firing positions, observation posts, personnel shelters, communication trenches, barrier systems, and dummy installations. A definite firing plan must be developed for each strongpoint.

An artillery-destruction groupment or subgroupment is formed, and necessary types and numbers of weapons are allotted. Guns or howitzers are used for direct short-range fire at embrasures or vertical walls (using HE delayed fuze). Medium howitzers or heavy mortars with HE and quick or delayed fuze destroy and interdict communication or other trenches: in frontal fire, high-angle fire is used; in flanking fire, flat-trajectory. Personnel shelters and emplacements with good overhead cover must be destroyed by high-angle fire from heavy or very heavy howitzers using HE or incendiary shells and delayed fuze. Mortars, howitzers, or light guns may be used to neutralize other, lighter positions or to blind them with smoke. In all cases, fire must secure maximum accuracy. Observation is deployed as far forward as possible. No more weapons than necessary are employed, and every round must be observed.

Firing upon fortified houses is normally difficult and time consuming, because, in modern tactics, the main battle position is dug into the basement, with

firing apertures broken through the wall. In the center of the basement, a personnel shelter is constructed, while a communication trench facilitates escape from one or more hidden exits. This position is not only given natural protection by the house foundations, walls, and floors, but it is also reinforced and fireproofed by the construction of barricades and blast walls, and the packing of earth on floors. The roof and upper stories are used for observation and harassing fire.

There are two methods of artillery attack upon such a strongpoint. Heavy or very heavy howitzers may demolish the entire position. If these are not available, or if time and ammunition do not allow their extensive use, an entirely different technique must be employed. Destruction of the upper structure alone is not only futile, but it hampers subsequent artillery and infantry operations by limiting visibility in dust and smoke, and increasing protection and camouflage afforded by rubble. The most effective technique is neutralization of the windows and roofs with time fire or shrapnel; destruction of the forward and other edges of the basement with direct fire or flat trajectory (HE, delayed fuze) fire from medium howitzers or guns; and interdiction of possible exits with suitable zone fire (by howitzers or mortars). After the main battle position is thus destroyed or neutralized, the upper structure may be destroyed by using HE or incendiary projectiles, or it may be mopped up by infantry.

PERMANENT FORTIFICATIONS. Successful fire upon massive structures requires comprehensive visual and fire reconnaissance, employment of very heavy howitzers and medium guns, close range and continuous observation and adjustment, and, if possible, suitable firing positions not over 5 kilometers from the target. Under favorable circumstances fortified targets up to 10 kilometers distant may be destroyed; at greater ranges only neutralization is usually possible. Destruction can rarely be accomplished in less than several days' reconnaissance and a day's fire, or with the expenditure of less than several hundred rounds per target.

Permanent fortifications are destroyed by the flat trajectory fire of medium and heavy guns, and of very heavy howitzers, or by high-angle fire from very heavy howitzers. Such targets are neutralized by direct, short-range fire of light and medium guns at embrasures and armor. The angle of impact in all cases must not be less than 58 degrees. Flat-trajectory fire, and especially direct fire, must be

employed whenever possible, since these bring about an economy of 80 to 90 percent in time and ammunition. Care must be exercised, however, to conduct such fire against the actual wall of the position, rather than against a mask or exterior blast wall.

Red Army artillery missions against massive structures are divided into four phases: fire reconnaissance, selection of firing positions for very heavy artillery, registration, and destruction fire. To conduct such an attack, an artillery destruction groupment or subgroupment is formed. As far as is necessary, its operations must be protected against counterbattery fire by the neutralization of enemy artillery.

Fire reconnaissance is conducted by medium and heavy howitzers, and, to a lesser degree, by mortars and rockets. It must be closely coordinated with repeated aerial and ground photography, and with continuous optical observation. Fire on the suspected area seeks to strip away masks and camouflage, and to establish the presence and thickness of concrete or armor, the outlines of the fortified structures, the location and direction of embrasures, and the system of tactical coordination with other strongpoints. In fire reconnaissance, the presence of gray dust in a low, wide burst and a sharp reverberation indicate concrete; a very marked reverberation, and frequent, sudden ricochets indicate the presence of armor. Indisputable evidence of the presence of permanent fortifications is afforded by the gradual disclosure of angular outlines, embrasures, and cupolas. On the other hand, a dummy position is indicated if repeated hits develop a large, sagging depression not over 2 yards above ground level without revealing any indications of the presence of concrete or armor.

If fire reconnaissance discloses a field fortification within the capabilities of the artillery then firing, these guns continue fire until the target is destroyed. Once fire reconnaissance has definitely established the presence and character of permanent fortifications, firing positions for very heavy artillery are chosen. One to two pieces are assigned to each target. Whenever feasible, the positions should allow flat trajectory or very high-angle fire at ranges under 5,500 yards, provide reasonable cover from enemy fire, and coincide as closely as possible with the longitudinal axis of the targets. Suitable covered approaches must exist. Observation must be provided as far forward as possible, preferably within 550 yards of the target. In some instances,

local infantry attacks may be necessary to facilitate such observation. Observation posts are either single or in pairs. The single observation post must coincide as closely as possible with the gun-target line. In every case, exact survey is indispensable.

Soviet gun positions for direct fire against embrasures are also chosen with great care; they should be within 660 yards of the target and in direct line with embrasures, vertical walls, or other vulnerable parts of the target. Extremely careful camouflage must be maintained in occupying positions and prior to opening fire. Artillery which has a mission of destruction takes precedence over all other weapons in the occupation of suitable firing positions and observation posts.

Fire continues until the obvious collapse of the target, or until two or three complete penetrations have resulted. This requires from two to ten direct hits by heavy guns or very heavy howitzers, depending on the strength of the fortification and the power of the weapon. Approximate ammunition requirements for each hit may be calculated by the probability formula. When destruction has been completed, interdiction fire by light and medium artillery is essential to prevent reoccupation of the ruins.

MINEFIELDS. Establishing gaps through minefields involves two phases: fire reconnaissance and fire for destruction. In fire reconnaissance, a heavy battery combs the entire suspected area, employing a parallel sheaf and elevation changes of one probable error. (Combing fire is an observed barrage progressively covering an area with suspected, especially immobile, targets. As soon as results of fire confirm the location of the targets—by explosions, sudden ricochet, etc.—massed fire for effect is initiated.) HE, with quick fuze, is employed. Two battery salvos are fired at each sight setting, with careful observation for signs of sympathetic detonations.

Once the boundaries of the minefield and of the desired gaps have been determined, fire for effect is begun. If possible, heavy or very heavy howitzers are used. The sheaf is closed or concentrated to 11-yard intervals. Ricochet fire is employed, with the burst no higher than 11 yards above the ground. Fire is conducted at one sight setting, with observation of each salvo, until no evidence of sympathetic detonations can be seen or heard. If the probable error in range is small and the minefield deep, then the bombardment is repeated at the next sight elevation, until the gap has been com-

pletely cleared. In the absence of heavy or very heavy howitzers, the Red Army may use medium howitzers or light guns against minefields. HE with quick fuze is used. Large expenditures of ammunition are necessary, however, and results are not always certain.

WIRE. Against wire, dragon's teeth, and similar resistant, small, but immobile, targets, the Soviets employ frontal, flat-trajectory fire by light guns or, in some cases, medium howitzers. Protection of these weapons by other artillery fire is generally necessary. If more than one weapon is employed, calibration and ballistic corrections must be applied. Whenever possible, direct fire is used; in no case should the range exceed 3,300 yards.

Medium howitzers or light guns are employed, singly or in small units, to destroy wire. If the desired gap is 9 yards or less, a concentrated sheaf is used; otherwise, the sheaf corresponds to the desired width. HE ammunition is employed, with superquick fuze and the minimum possible charge (to produce the maximum angle of impact with least range dispersion). The forward edge of the wire serves as the aiming point; to secure the best results, one-third of the rounds should be shorts. Fire is continued until the gap is completely cleared. Requirements in time and ammunition vary greatly with the range and the depth of the wire barrier.

Dragon's teeth are attacked with short-range direct fire. Light guns with AP ammunition are employed against concrete and granite dragon's teeth; timber obstacles are destroyed by medium howitzers with HE fire and superquick fuze. Artillery fire is ineffective against heavy steel obstacles. In all cases, dragon's teeth and similar obstacles require the expenditure of much time and ammunition. Fire must be continued until the remnant stumps can be cleared by tanks.

b. Fire objectives. The objectives of Soviet fire for effect are: neutralization, destruction, interdiction, or harassment. Fire reconnaissance is either an independent objective or a phase of observed fire for effect. Above all, choice depends on the targets' threat to the infantry (or tank) scheme of maneuver. Successive phases of an operation will often require different objectives in firing upon the same target: for example, neutralization during the artillery preparation, destruction during the assault, and interdiction of the ruins during exploitation. Other important factors are: firing capabilities of the artillery within the time and with the ammunition available; accuracy of target location and reg-

istration; size of the target and its resistance to fire; range; and meteorological and visibility conditions.

Neutralization is the normal objective of artillery fire; by employing surprise and intense fire, almost any target can be successfully neutralized. This condition is primarily psychological, and results normally from attacks on personnel that achieve 25 percent casualties, with accompanying shock and destruction. Neutralization is achieved by two or three repeated periods of concentrated fire, interrupted by periods of adjustment and methodical fire. Whenever possible, continuous observation must be maintained on neutralized targets. If signs of activity are observed, harassing fire should be employed; a major resurgence of activity should be neutralized by a new concentration of fire.

The annihilation of personnel or the certain destruction of matériel by artillery fire are possible only under favorable conditions. Direct fire at short ranges, as the most certain, rapid, and economical method, must be employed whenever possible. Flat-trajectory observed fire and high-angle observed fire by medium, heavy, and very heavy artillery demand successively greater accuracy in initial data and a greater expenditure of time and ammunition. Unobserved fire for destruction is practicable only with large masses of heavy and very heavy artillery and cannot be guaranteed against small, mobile, or very resistant targets. It should be utilized only in exceptional cases, against targets of the greatest importance. Fire for destruction by large masses of artillery is usually feasible only against personnel or light field fortifications. When more than one piece is employed for the destruction of a small resistant target, full ballistic preparation, precise registration, and continuous control of fire are indispensable.

Soviet artillery fire is widely employed to deny terrain to the enemy and to immobilize him under cover. The principal types of interdiction fire are antipersonnel and antitank defensive barrages, accompanying barrages, accompanying concentrations, and distant interdiction concentrations. All interdiction fire requires accurate registration on the target, and continual knowledge of the exact location of friendly troops. The battalion, or its equivalent, is usually the smallest unit to conduct interdiction fire. Often such types of fire are mixed: for example, an antipersonnel mortar barrage fired in conjunction with an antitank artillery barrage.

ANTIPERSONNEL DEFENSIVE BARRAGES. These are planned so as to lay down fire on registered and observed phase lines, screening friendly forces against infantry attacks or counterattacks. If the friendly troops are under cover, such barrages may be laid down not closer to them than 220 yards with frontal fire, and 110 yards with flanking fire. If the friendly troops are in the open, minimum distances for light or medium artillery are 440 yards with ricochet or superquick fuze, and 220 yards with quick fuze. The normal sheaf is employed in frontal fire; in flanking fire, platoon (two-gun) concentrations are separated by one sight setting for guns or two for howitzers. Fire is conducted at one sight setting only. At each piece, 10 or 12 rounds of fuzed ammunition are set aside; in firing, two or three rapid volleys are followed by methodical fire every 5 to 10 seconds. Registered ranges and deflections are noted prominently on each piece; care is taken to correct for decreases in range after prolonged fire and for other errors. Calls for anti-personnel defensive barrages take precedence over all other firing missions, which are immediately suspended.

ANTITANK DEFENSIVE BARRAGES. These have been described under attacks against tanks.

ACCOMPANYING BARRAGES. These are employed to support infantry and tanks through the main line of enemy resistance (1,650 to 2,200 yards) in the assault of organized positions. They consist of a rolling barrage by heavy mortars, medium howitzers, or light guns; direct fire through gaps in the infantry lines by light guns and howitzers; and accompanying concentrations against rear areas by heavier weapons. In organizing the rolling barrage, the zone of fire is divided into sectors by primary and intermediate phase lines. The first primary phase line is 220 to 275 yards from the line of departure. In the support of infantry, other primary phase lines are from 165 to 330 yards apart (usually on enemy trenches or on other lines of resistance or movement); in the support of light tanks, 275 to 440 yards; in the support of medium or heavy tanks, 440 to 880 yards. Intermediate phase lines for infantry are separated by 110 yards; for tanks by 220 yards.

The width of the sheaf varies from 40 to 80 percent of normal. Density of fire on each phase line varies from 6 to 18 rounds per 110 yards per minute, depending on the caliber (76.2- to 152-mm) of the weapon used. When exceptionally heavy resistance

is expected, the barrage may be deepened—not thickened—by additional layers of medium or heavy artillery fire. HE with superquick or delayed (ricochet) fuzes and flat-trajectory fire are employed; also shrapnel and smoke shells under favorable circumstances.

The duration of fire on each primary and secondary phase line is determined by the speed of advance of the supported troops. Fire is lifted by signal from primary phase lines, and by schedule (not over 2 minutes) from intermediate phase lines. Accompanying barrages require exceptional safeguards: full ballistic preparation and precise registration, reliable multiple-signal systems, and continual observation of friendly troops from all possible points.

ACCOMPANYING CONCENTRATIONS. This type of fire, employing uniform zones, neutralizes suspected or active areas of enemy resistance. It is employed either as a part of an accompanying barrage or—if the resistance is moderate or when ammunition is insufficient for an accompanying barrage—independently. The concentrations may be fired on call or on a schedule. Generally, fire is lifted by signal.

INTERDICTION FIRE AT LONG RANGES. This is used to block communications. Employment of precise data is necessary to avoid excessive waste of ammunition. If the target is under observation, fire is begun at the approach of enemy vehicles or personnel; otherwise, an irregular schedule of harassing fire is maintained. The weapons and firing unit employed depend on the range and the size of the target.

Harassing fire, designed to reduce enemy efficiency and excite return fire, is conducted by roving batteries or from alternate positions. It may consist of sudden concentrations, or the more constant fire of a few guns. Intervals, expenditure of ammunition, and pattern of fire must be constantly varied to secure maximum effect. High explosive with delayed (ricochet) or superquick fuze and minimum charges are utilized.

Fire reconnaissance, conducted by roving batteries or by elements of an artillery destruction groupment, seeks to clarify the enemy situation and to permit the economical and effective use of heavy and very heavy artillery by provoking enemy fire or other noticeable activity; by stripping off camouflage, earth, and other cover from suspected permanent fortifications; by detonating mines, etc. Medium guns and howitzers are employed, with de-

layed (ricochet) or quick fuze, depending on the target. Observation, aerial photography, or sound ranging are indispensable. Against areas suspected of containing personnel, harassing or combing fire is most effective; against minefields, combing fire is required; against camouflage, combing or concentrated fire may be utilized.

c. Registration. The Soviets regard accurate registration as the indispensable foundation of their techniques of massed fire and fire on unobserved targets. The four elements of registration are: ballistic preparation; development of a network of registration check points; adjustment of fire; and transfer of fire to the target, or massing it on the target.

In massing large quantities of artillery, registration is limited to gain surprise and to avoid obscuring observation. Registration fire is usually conducted by one piece of each caliber and a model from each battalion or groupment, although the proportion may be as low as one piece every 4,400 to 5,500 yards. Ballistic preparation and survey must have been completed. The registration piece must be the best available, that is, have the lowest differential reduction of muzzle velocity, and be carefully calibrated, preferably by fire.

ADJUSTMENT TECHNIQUE. The primary technique of adjustment of fire is bracketing, controlled by a single axial or lateral observer. Whenever possible, shells from the same lot and of the same weight and fuze setting are employed both in adjustment and in fire for effect. For adjustment on an impact check point, at least four rounds are required; for adjustment on an air burst or sound ranging check point, from six to nine rounds.

Normally, adjustment is fired by a single piece, with corrections for range, deflection, and—in air burst or ricochet—elevation. When speed is desired, as in adjustment on personnel, or when adjustment is by sound ranging or aerial observation, battery or battalion salvos are employed.

OBSERVATION. Aerial observation is undertaken with the light, two-seater U-2 airplane, the slow but heavily armored Stormovik, or with an observation balloon. It is normally limited to ranges in excess of 5,500 yards or to areas inaccessible to ground observation. In every case, thorough briefing of the pilot and air observer in land marks, orientation points, and recognition signals is required to reduce time in the air and to obviate errors. Salvos are always concentrated. The fire of battery or battalion ladders is a common type of

control. In another method of correction, the observer drops a flare or a smoke bomb at a point visible to ground observers and adjusts fire in relation to this reference point.

When large numbers of guns are firing, identification of the correct bursts for adjustment is insured by checking the estimated time of flight with a stop watch.

Adjustment of fire by paired observers is undertaken to insure both greater accuracy and greater economy of ammunition than are possible with a single observer. This is the basic method for heavy artillery, and is utilized whenever time and terrain permit establishment of suitable observation points and signal communications. The angle of intersection between the observers' lines of sight and the target must always exceed 250 mils.

FIRE TRANSFER. Two techniques are employed for transfers of fire: K-transfer (computation of the coefficient between survey and registration distances, angle of site, drift, and necessary additional corrections for changes of ammunition) when survey has been completed; and direct transfer from a real or an arbitrary check point with or without survey. The first method is applicable to transfers up to 1,650 yards from the check point; the second, up to 330 yards, with a deflection not in excess of 300 mils.

Whenever possible, fire should be transferred immediately after adjustment on a check point. When this is impossible, the correction of two factors must be considered. Adjustments for meteorological conditions must be made within a maximum of 3 to 12 hours, depending inversely on the height of trajectory. Adjustments for change in range of the trajectory due to the heating of tubes and ammunition must be made after 20 to 30 minutes of steady fire. To compensate for this decrease in range, elevations should be raised by one or two sight graduations for ranges of 3 to 6 kilometers; by two to three graduations for longer ranges.

More accurate correction of the transfer results from re-registration executed by the original registration piece. If graphs of the lines of registration distances and deflections have been previously prepared, it is necessary only to fire one check point. The old data are then recomputed proportionally to the new correction. Such re-registration is especially important in unobserved fire.

6. ARTILLERY ANTITANK TACTICS

The destruction of tanks and self-propelled guns is the primary or secondary mission of all artillery,

and Red Army crews on all types of artillery are trained in direct fire. The antitank defensive barrages of medium and heavy artillery have been described above under the discussion of types of targets. The primary tank-destroying weapons are,

rifle corps and division commanders for the protection of primary sectors. Part of the antitank artillery must always be kept by the Commander of Combined Arms as a reserve. For example, one-fourth of the antitank guns of a rifle division, in-

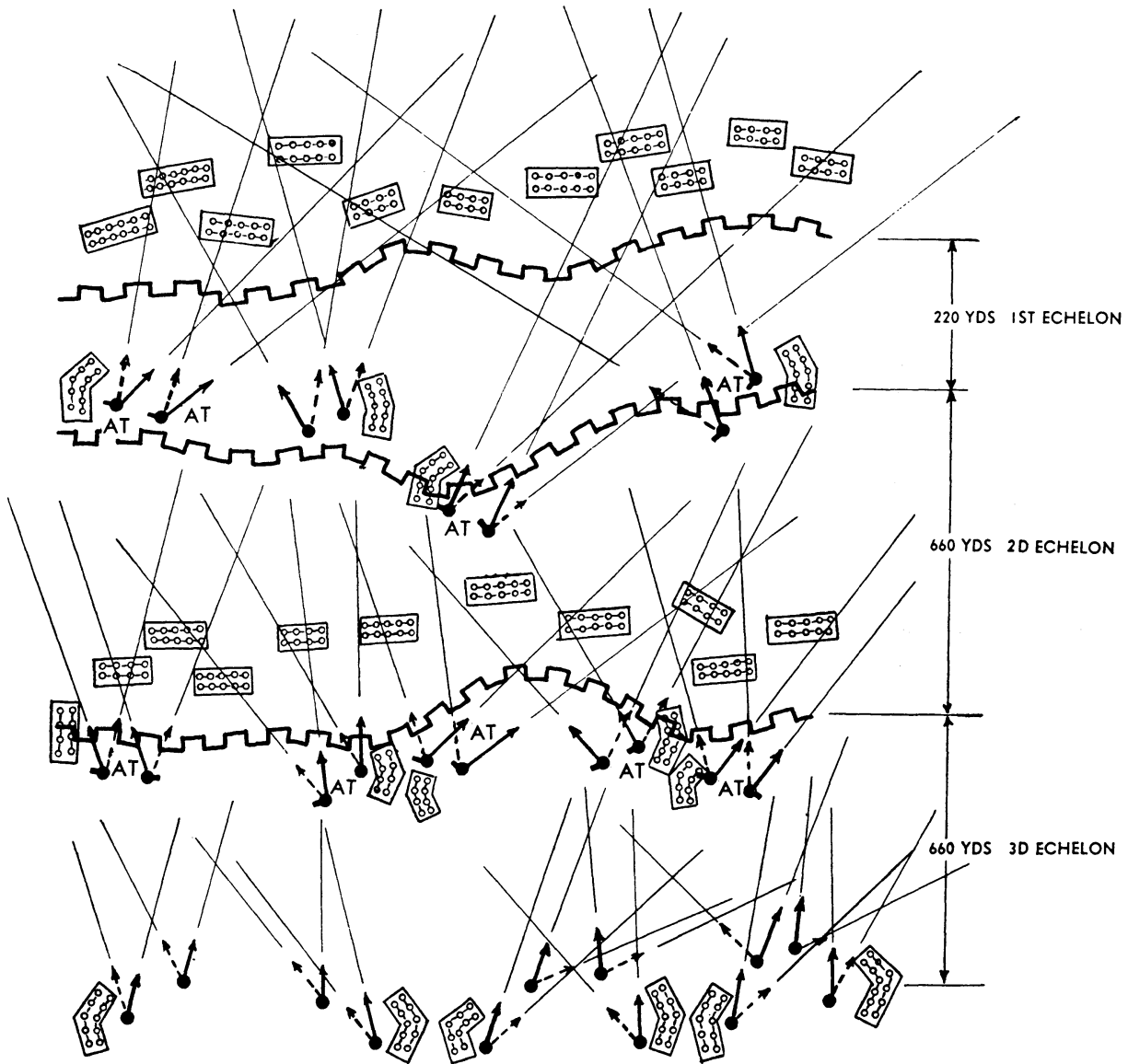


Figure 33. Antitank artillery supplemented by obstacles in a Soviet main battle position.

however, towed antitank guns: 45-mm, 57-mm, 76.2-mm, 85-mm, and 100-mm guns are found in organic and GHQ antitank artillery units. Self-propelled artillery often supports towed antitank guns, particularly in mobile corps; self-propelled artillery tactics are described under section III, Armored and Mechanized Forces.

Antitank artillery regiments are often attached to

cluding regimental and battalion weapons, are held in the mobile divisional antitank gun reserve.

Coordination between antitank artillery and other arms, especially field artillery, mortars, engineers, and infantry, is of prime importance. Antitank artillery regiments are also used as tank support in the area of the main effort.

Antitank artillery is usually employed in echelons, with weapons of varied caliber in each to insure equal distribution of fire power. Light and medium antitank artillery is supported as a rule by heavy antitank artillery, such as the newly developed 100-mm gun, for fire against heavy enemy tanks. Lighter guns are emplaced as far forward as practicable, although normally not before the second line of infantry trenches. Well dug-in and camouflaged positions, protected by infantry and antitank rifles, are mandatory. Each battery must have at least one alternate position. When this is occupied, the original position is maintained as a dummy position. Change of position usually takes place at night. Antitank guns in each position are placed in rhombus pattern to obtain all-around fields of fire.

The fire plan of Soviet antitank artillery is carefully worked out, with particular attention given to the natural tank approach routes. The fire of the antitank guns is usually coordinated with a system of ground obstacles erected under engineer control; constant liaison and coordination between antitank artillery and combat engineers is therefore mandatory. Also, minefields normally are laid to protect the gun position itself (fig. 33).

The Soviets compute the minimum required density of antitank weapons in defensive sectors on the basis of the suspected number of enemy tanks, the number and characteristics of tank approaches, and the average number of rounds necessary for a tank kill. On the basis of experience against enemy armor, the Red Army figures on six rounds of fire from 76.2-mm antitank guns, or 12 rounds from 45-mm antitank guns, for the destruction of one medium tank.

Antitank fire is directed not only against tanks, but also against accompanying infantry. Such antipersonnel fire is usually supported by mortar units and automatic weapons in coordination with the antitank artillery.

Antitank guns continue firing until overrun, since the Red Army considers that the destruction of a large number of enemy tanks represents the successful execution of the mission even when all of its own pieces are lost. The Soviets consider that each antitank gun is capable of destroying an average of 2 to 3 enemy tanks before it is put out of action.

As a rule, antitank guns fire at ranges of 550 to 660 yards in order to avoid revealing prematurely the location of positions. However, when a so-called "firesack" is prepared, a limited number of guns (usually flank pieces) open fire at the first enemy tank wave at 1,650- to 2,200 yard ranges, attempting to channelize the enemy tanks into the area of the prepared concentration. Reinforcing self-propelled artillery fires at the tanks from concealed positions; supporting artillery, such as 152-

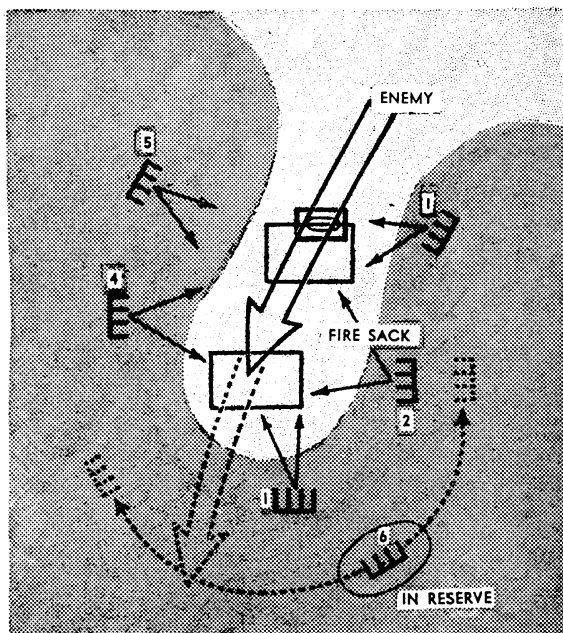


Figure 34. Organization of a firesack by an antitank artillery regiment.

mm howitzers, fires from positions to the rear and flanks of the antitank guns (fig. 34).

The mobile antitank artillery reserve usually consists of one battery from each regiment. It is located to the rear, in the center, and on the flanks of the defense sector under the centralized control of the Commander. Artillery reserves are committed by platoons against enemy tank attacks at the flanks. One platoon will open fire immediately while another moves to a more favorable position, pulled over short distances by the gun crew.

A secondary mission of antitank artillery is its employment in support of infantry and tank attacks, with the bulk of the antitank artillery committed in the first assault echelon (fig. 35).

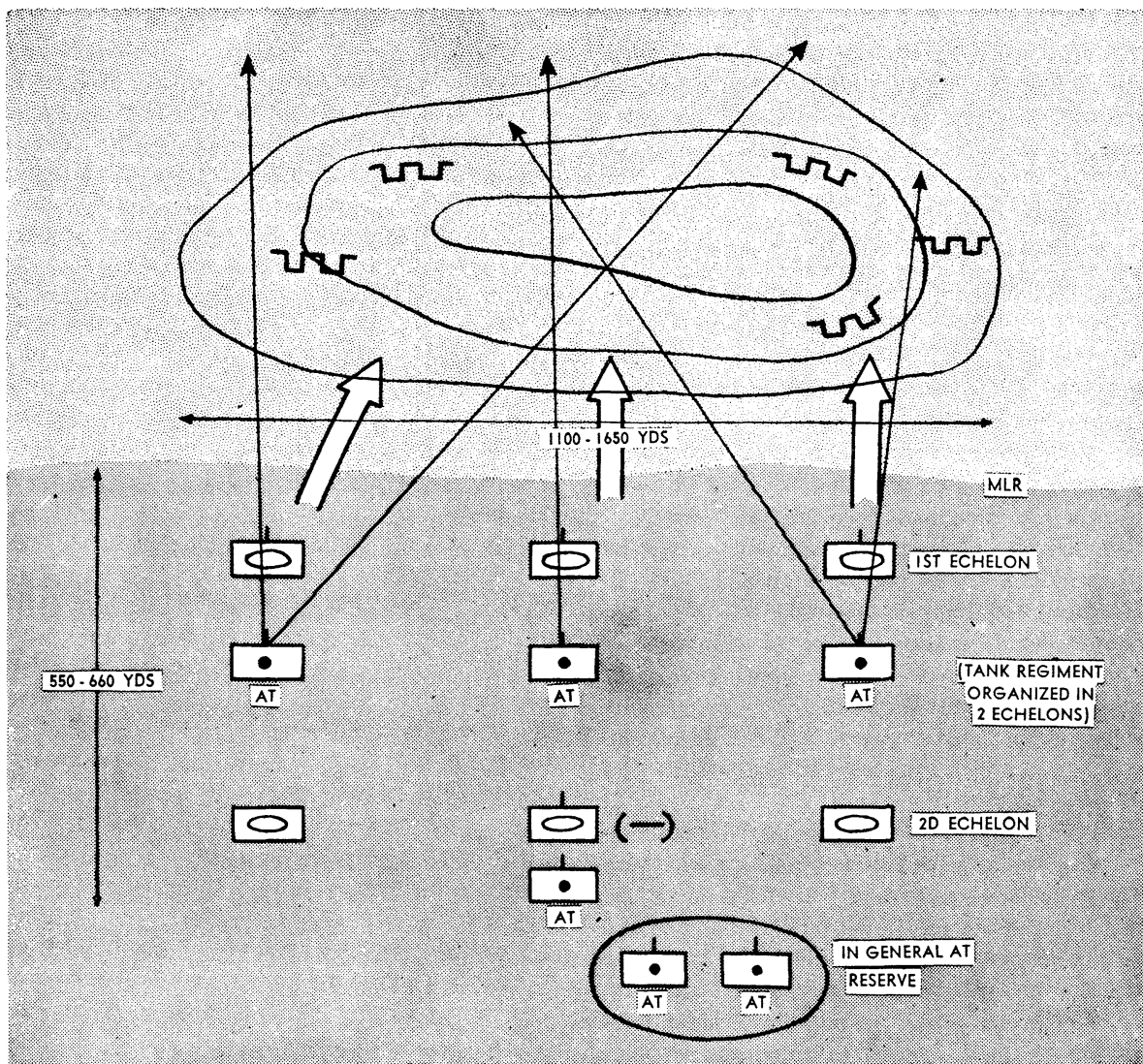


Figure 35. Antitank artillery regiment in support of a tank attack.

Section III. ARMORED AND MECHANIZED FORCES

1. COMBAT MISSIONS

The combat tasks of Soviet armored forces are to deliver decisive blows on a narrow sector, to wedge deeply in the enemy defensive system, and, in coordination with other arms, to envelop and destroy large hostile units. The paramount principles of Soviet tank tactics are the continuity of cooperation with other arms and full exploitation of tank mobility.

From late 1942 to the end of World War II was a period of definite change in Soviet employment of armor. Soviet strategists believed, in the early

part of this period, that the main effort should be made primarily by infantry and that armor should be used in the exploitation of a break-through to develop a pursuit. This tactic, however, seldom was successful, since German defenses were progressively deepened to the point where resistance was never completely broken by a penetration of the main line of resistance.

As German defenses stiffened, Soviet armor was more extensively used to effect penetrations; and additional units of armor were used successively to effect exploitation, pursuit, and envelopment.

Current Soviet doctrine requires that all armor be given local protection by infantry, normally riding on the vehicle prior to deployment in order to com-

bat concealed infantry traps. Advance engineer detachments and engineer tank riders clear lanes in minefields. In addition, mine-clearing vehicles called "trawlers" (operating on the same principle as the British "Scorpion") have been developed to clear paths for tanks in the assault of strong defensive positions. The enormous depth of German defensive systems with continuous lines and centers of resistance made it necessary for Soviet tank formations to be reinforced by fully mobile infantry, artillery, and mortars in order to regain their momentum against continuous resistance. Self-propelled artillery could not be limited to the role of assault guns but had to be capable of centralized, massed indirect fire. Full-track carriers (Bren gun carriers and Weasels) proved most effective for the transportation of infantry and mortars.

2. ARMORED FORCES AND THEIR CAPABILITIES

Armored forces as large as "tank armies" are found within the Red Army, but the normal operating units are the tank corps and the mechanized corps. These units are usually part of the GHQ reserve to be used by the army or front commander as the situation may demand. They are well balanced units resembling our armored divisions in strength and organization. There are fewer tanks in the Soviet armored units but the medium and heavy tank components, compared to U. S. light and medium tanks, give more weight to the Red Army armored units. Similarly, the Soviet units have less self-propelled artillery but it is of greater caliber length, hence more powerful. The Soviet armored unit has a larger infantry component than the U. S. armored division and also contains heavy mortar units and a rocket battalion which are absent in the U. S. armored division.

The Soviets consider that armored forces are most effectively employed in the enemy operational depth. After intensive artillery preparation, the infantry assault penetrates into enemy defenses. Then, armored forces strike in the direction of the deepest infantry penetration on a narrow front from a concealed centralized position, develop the breakthrough, and strike at the enemy's rear to destroy him (figs. 36 and 37). The scale of operations may reach mammoth proportions as in the break-through of German defenses on the River Oder by some 4,000 tanks supported by 5,000 planes on a 50-mile front. Large Red Army armored forces advanced as far as 125 miles in 3 days under conditions of continuous and intensive combat against the German Army.

The maneuver of armored forces is limited by extreme terrain conditions such as swamps, thick woods, mountains, and deep snow, but they are not road bound and operate freely over difficult country. In a break-through sector a tank corps moves on a front not wider than 3 miles, but may spread out in the enemy operational depth depending upon the available road nets, terrain, enemy resistance, and assigned objectives.

Rapid transfers of Soviet armored units from one sector to another laterally have been executed on many occasions. These movements have been executed with secrecy and without disrupting the supply lines of units holding the area traversed. The Soviets emphasize that the duration of sustained combat depends upon resupply efficiency. Continuous fuel and ammunition supply can maintain armored units in action for several weeks, but Red Army doctrine prescribes that infantry units must consolidate and hold the territory penetrated by tanks. The cavalry-tank team can increase the tempo of the offensive from 1.5 miles per hour with infantry to 3.5 miles per hour with cavalry.

a. Tank corps. The mission of the tank corps is to destroy enemy infantry and firing positions throughout the depth of the defenses in the break-through sector. The tank corps has great fire and shock power for a frontal attack in a narrow sector, but coordinates its assault with infantry units in that sector. This infantry-tank assault team, aided by intensive artillery preparation, repeatedly spearheaded Soviet offensives.

The major corps units are the three tank brigades, and the motorized infantry brigade, supported by two self-propelled artillery regiments—one regiment each of 76.2-mm antitank artillery, antiaircraft artillery, and 120-mm mortars, a rocket battalion, and a 45-mm antitank battalion.

The tank brigades are the striking elements of the tank corps, and are reinforced by an attached heavy tank regiment when circumstances require maximum shock power. The tank brigade has a strength of about 1,200 men and consists of 65 tanks and a battalion of infantry with antitank rifles, anti-tank guns, and mortars.

b. Mechanized corps. The mechanized corps is very similar to the tank corps in composition except for its larger infantry component. Three motorized infantry brigades, one tank brigade, and one additional tank regiment give the mechanized corps a strength of 16,000 as compared with 10,300 in the tank corps. The tank corps has two self-pro-

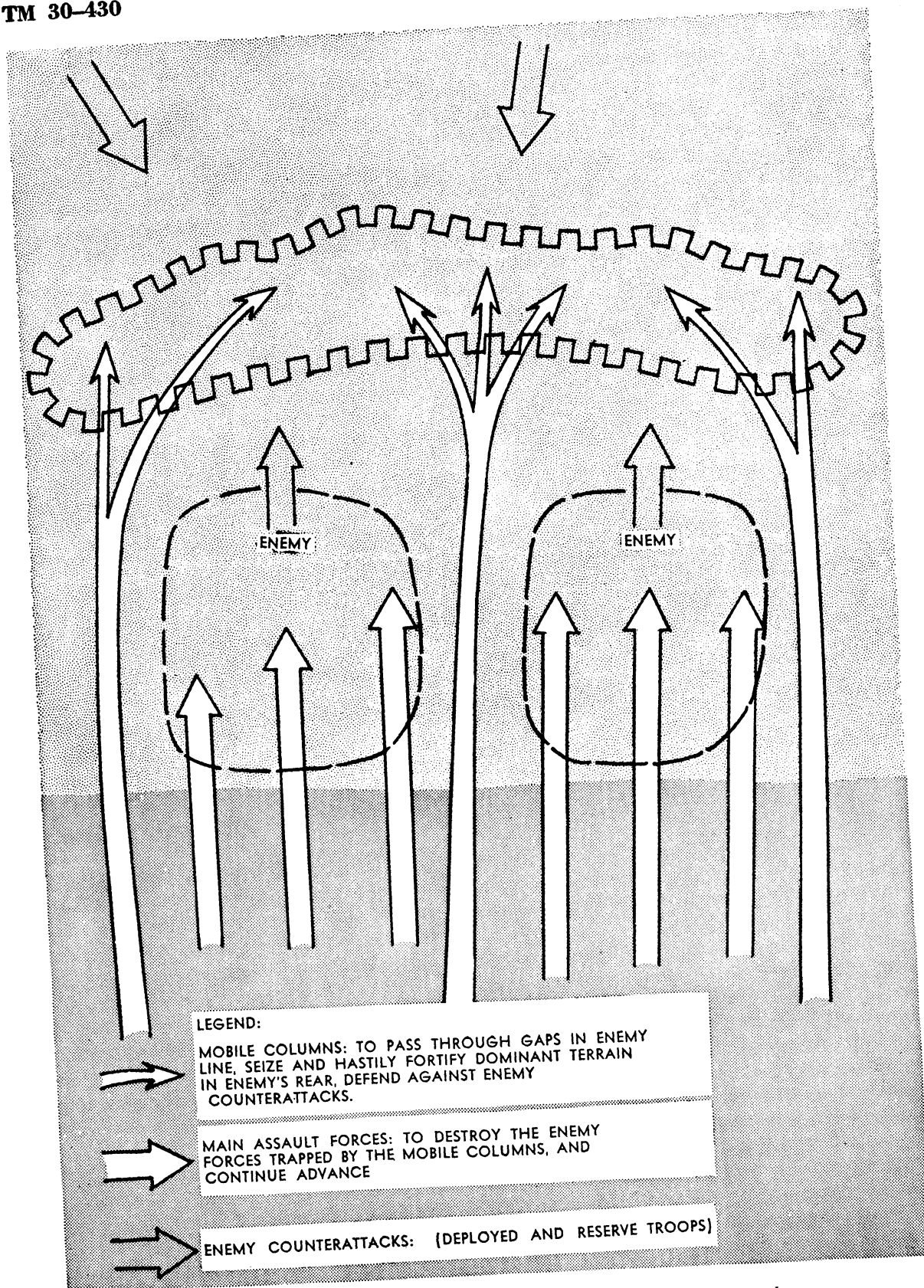


Figure 36. A typical armored assault in coordination with a frontal attack.

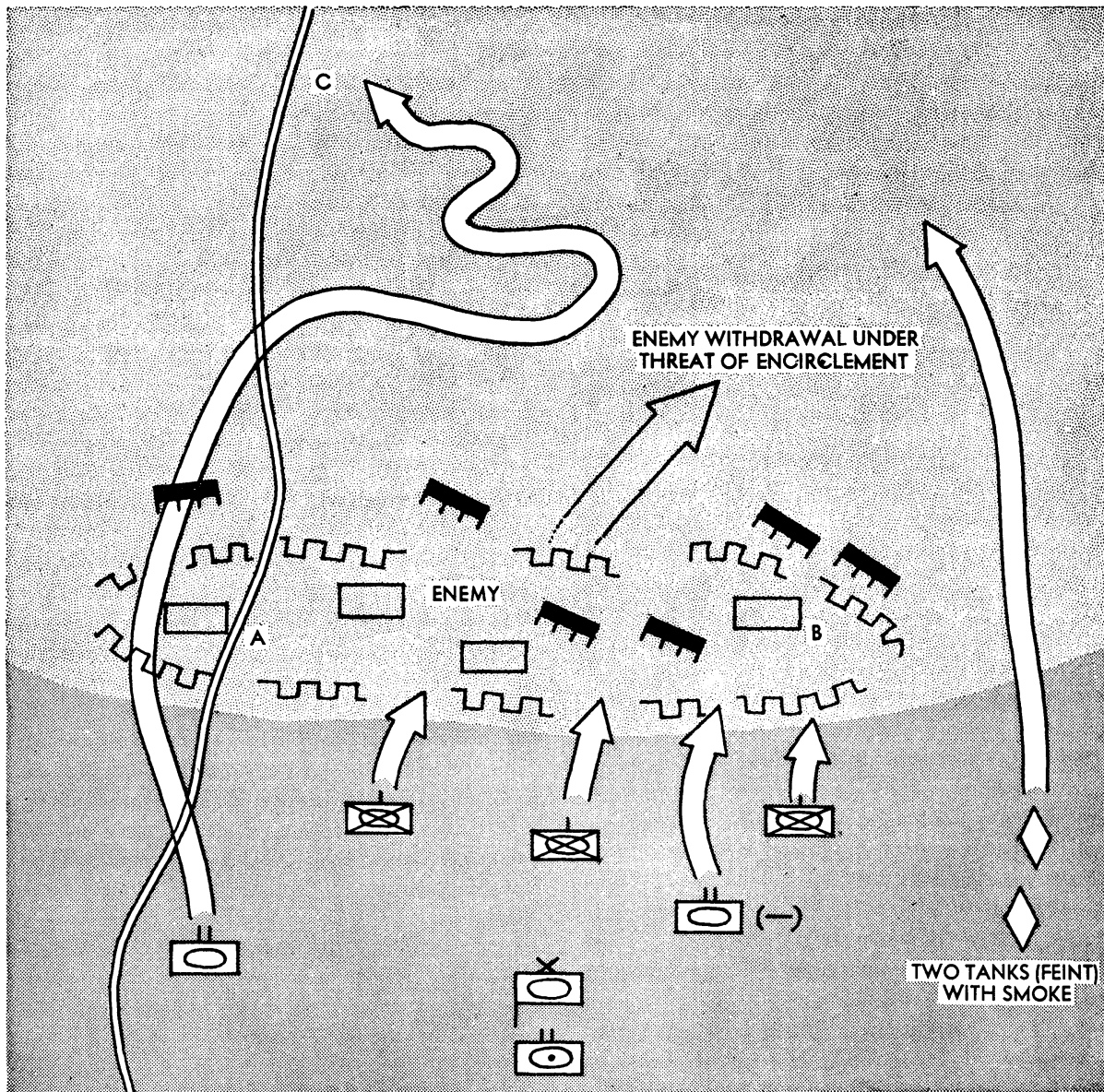


Figure 37. Tank brigade in a coordinated attack.

pelled artillery regiments; the mechanized corps has one.

A mechanized brigade consists of a motorized brigade and one tank regiment of 40 medium tanks. The mechanized corps centralizes control of the four tank regiments but may detach them to support the infantry elements. An additional heavy tank regiment is sometimes attached to the corps.

The mission of the mechanized corps is to exploit break-throughs in organized defenses rather than to accomplish the break-through. It is capable of greater independent action than the tank corps, be-

cause of its balanced strength of infantry and armor which resembles the U. S. combat command in tactical employment.

The average for mechanized corps operations in four major offensives during 1943-44 follows:

Continuous action.....	46 days
Period of concentration.....	4 days
In offensive operation.....	20 days
On defensive.....	22 days
Percentage of time on defensive.....	52 percent
Maximum penetration.....	228 miles
Depth of territory consolidated after counterattacks by enemy reserves.....	202 miles

c. Infantry-support armored units. Small GHQ units, such as the independent heavy tank regiments, are frequently attached to infantry units to support the infantry assault of strong defensive positions. The missions of these tank units are designated by the commander of the infantry unit to which the tanks are attached.

3. ROLES OF COMPONENT ARMS OF ARMORED FORCES

a. Medium tanks. In the Red Army, the medium tank is the basic shock and maneuvering element of all armor. Its primary mission is to assist the infantry in occupying enemy positions and destroying enemy personnel. This mission is usually accomplished by frontal penetration or deep outflanking of enemy positions. In frontal assaults, medium tanks advance on a broad front or in a wide wedge under cover of supporting weapons. They are preceded or closely followed by infantry or engineers who guard the flanks and rear, reconnoitering areas of suspicion. The tanks engage machine guns, infantry heavy weapons, and antitank guns with utmost vigor in order to force the enemy to disclose his entire system of defensive fire. Frontal tank attacks must always be deeply echeloned.

In operations against enemy armor, particularly against heavy tanks and assault guns, medium tanks made full use of their speed and maneuverability, attempting constantly to strike at flanks or rear. The use of medium tanks as tank destroyers from concealed positions is exceptional. Even in defense, tanks are used in a mobile role and particularly to support counterattacks.

b. Heavy tanks. Heavy tanks are used in mass in the direction of the main effort, and always in coordination with medium tanks which protect their flanks and rear. Medium tanks force commitment of enemy antitank weapons which are then destroyed by heavy tank fire. In operations against armor, particularly medium tanks, the heavy tanks attack frontally, while accompanying medium tanks envelop the enemy flanks and rear. Only in the support of assault groups destroying emplacements are heavy tanks used in small separate detachments of 2 or 3 tanks. Infantry must always support heavy tanks. When enemy opposition is severe, heavy tanks reinforce medium tanks by attacking heavy enemy tanks, self-propelled artillery, antitank and field artillery, and permanent fortifications. They depend primarily upon long-range, flat-trajectory, direct fire from short halts.

c. Self-propelled artillery. Self-propelled artillery provides security for tanks by protecting their flanks and rear against armored counterattacks. They operate from hull defilade or concealed positions, covering probable avenues of tank approach. Unlike towed antitank guns, which fire in place until either they or enemy tanks have been neutralized, Soviet self-propelled guns utilize their mobility and speed repeatedly to outflank attacking tanks. They must, however, be provided with automatic weapons and antitank rifle protection against enemy infantry. In frontal assaults, self-propelled guns follow tanks (at approximately 400 yards) by moving from cover to cover.

They also support infantry in the reduction of by-passed field or light permanent fortifications. Heavy self-propelled guns reinforce the fire of medium self-propelled howitzers and tank destroyers. Their heavier armor permits more aggressive tank-like tactics. Their great fire power makes them extremely effective against all armored vehicles, artillery, and permanent fortifications. Low rates of fire and limited ammunition capacity are their principal weaknesses.

d. Mine-clearing tanks. Flail-type mine clearing tanks are employed to clear lanes through enemy minefields as rapidly as possible in order to facilitate the uninterrupted forward progress of tanks and self-propelled guns. Mine-clearing tanks approach the line of departure from concealed positions during the artillery preparation phase and take lead positions in the infantry tank-support groups. Two or three mine-clearing tanks are used for clearing each lane. Close support by tanks, self-propelled guns, mortars, and pioneers (combat engineers) is always provided to protect the mine-clearing tanks from enemy fire covering the minefield. Assault tanks follow mine-clearing tanks within 60 yards. The pioneers from the first echelon of the tank support group move forward with the mine-clearing tanks, using visual signals for working with the tanks. The pioneers remove mines from sectors of the field inaccessible to mine-clearing tanks, remove tank obstacles, and assault prepared enemy engineer fortifications under fire cover of the mine-clearing tanks and assault tanks. After passing through a minefield, the mine-clearing tanks assemble in a concealed area to reorganize for succeeding missions, while the assault groups move forward.

e. Artillery and mortars. Close artillery support is delivered to tank formations at all times. Great flexibility in the control of artillery is normal

when it moves forward into the penetration area. After the artillery preparation, which is the normal initial artillery mission for all artillery and mortars, long-range army artillery units continue to support the armored assault for depths up to 5 or 6 miles. Direct army artillery support of the armored unit ceases at this point, and other missions are executed—such as counterbattery fire against enemy positions on the flanks of the break-through area. The mobile artillery units continue to deliver fire against enemy strongpoints encountered in the penetration area and on the flanks, as directed by the supported armored unit commanders. One of the most important Soviet artillery missions is to combat counterattacking enemy tanks. Fire against strongpoints is delivered in short area concentrations. Not less than one unit of fire is allotted to artillery for the assault phase of the armored offensive. Approximately one brigade of artillery supports each tank brigade of the first corps echelon. The 152-mm gun-howitzers and the 122-mm guns are deemed especially effective in supporting tanks against strong resistance.

Heavy mortars are always employed in support of motorized infantry. The battery commanders' observation posts are well forward within $\frac{1}{2}$ to 1 mile of the advance units. Control is decentralized to battery commanders; larger concentrations are developed when enemy resistance slows down the advance. The heavy mortars are always used in supporting the independent operations of motorized infantry, as well as during the break-through phase.

f. Rocket units. The rocket battalion is under the control of the corps commander throughout the entire operation. Rocket units are used only at critical times. The launchers are brought to their firing positions secretly and are fired in sudden concentrations. Rocket units are used for independent operations of the armored corps, against enemy counterattacks, and during the general artillery preparation for the corps offensive.

g. Infantry component. The infantry component of the armored corps is not entirely concentrated in the motorized infantry brigades, but has infantry groups for local security of tanks and self-propelled guns. The motorized submachine-gun battalion of the tank brigade has a tank-riding company as well as a mortar, antitank gun, antitank rifle, and an automatic-weapons company. These infantrymen facilitate the advance of armor by neutralizing enemy infantry antitank weapons and traps; they

also organize small defensive positions against enemy counterattacks.

h. Engineer troops. Engineer troops of the armored corps are used especially in small units as tank riders and with the leading motorized elements. Their primary duties are to clear enemy mines and obstacles, to facilitate the advance of armored vehicles, and to assist in the reduction of strongpoints with demolitions, flame throwers, and other engineer assault equipment. In defending armor against counterattacks, special hasty mine-laying techniques are employed using both controlled and contact type mines. The corps engineer battalion is capable of other types of engineer support as well.

4. ARMORED AND MECHANIZED FORCES IN THE OFFENSIVE

The armored offensive differs from the infantry offensive in the following respects: The main effort of the armored offensive is made on a relatively narrow front by a deeply echeloned formation with the objective of completely breaking through enemy defensive positions and exploiting the break-through by attacking enemy rear installations, encircling and destroying enemy forces, and generally effecting deep penetrations. The break-through operation of large armored units passes through five distinct phases: Concentration of forces, fire preparation, the assault, securing the offensive, and exploitation (fig. 38).

a. Concentration phase. This phase involves movement of units, the dispersal of units, and very extensive planning of coordinated action of all arms for all phases of the offensive. Carefully planned lateral movements of armored units from adjacent sectors to the concentration area are executed at night for distances up to 60 miles. Special traffic controls insure regulated movement across the supply lines of adjacent front-line units with minimum interruption. Usually the armored formation moves in at least two columns, with tanks and self-propelled artillery to the front, and the remaining columns of wheeled vehicles and tank corps reserves moving on interior roads.

The concentration is usually 25 to 50 miles from the front lines (fig. 39). The concentration phase varies in duration from 3 to 8 days, during which time coordination of all arms is based on information obtained from reconnaissance units and observers. The reconnaissance group of the tank or mechanized corps, the various artillery observation and survey detachments, engineer reconnaissance

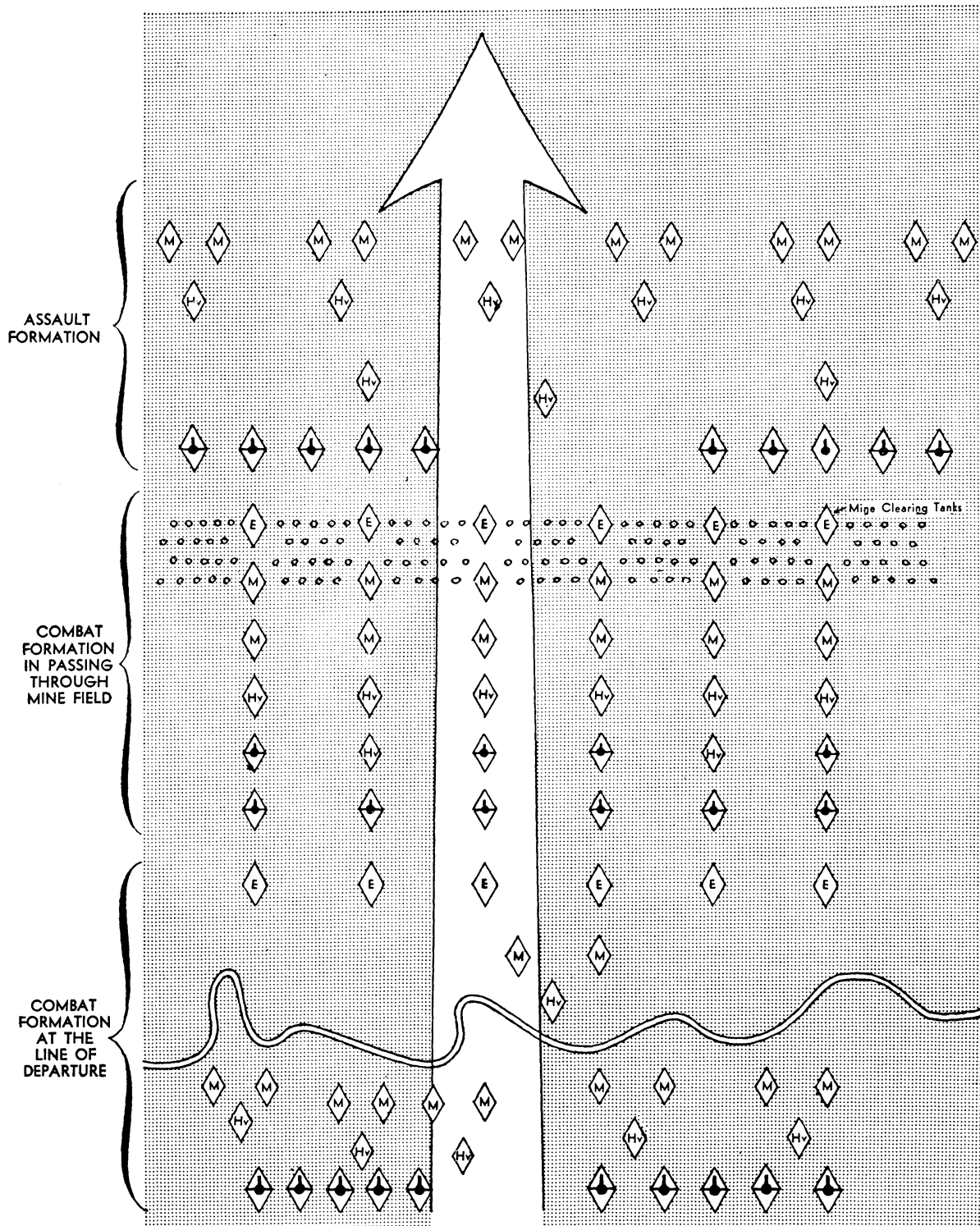


Figure 38. Tank brigade in break-through operations.

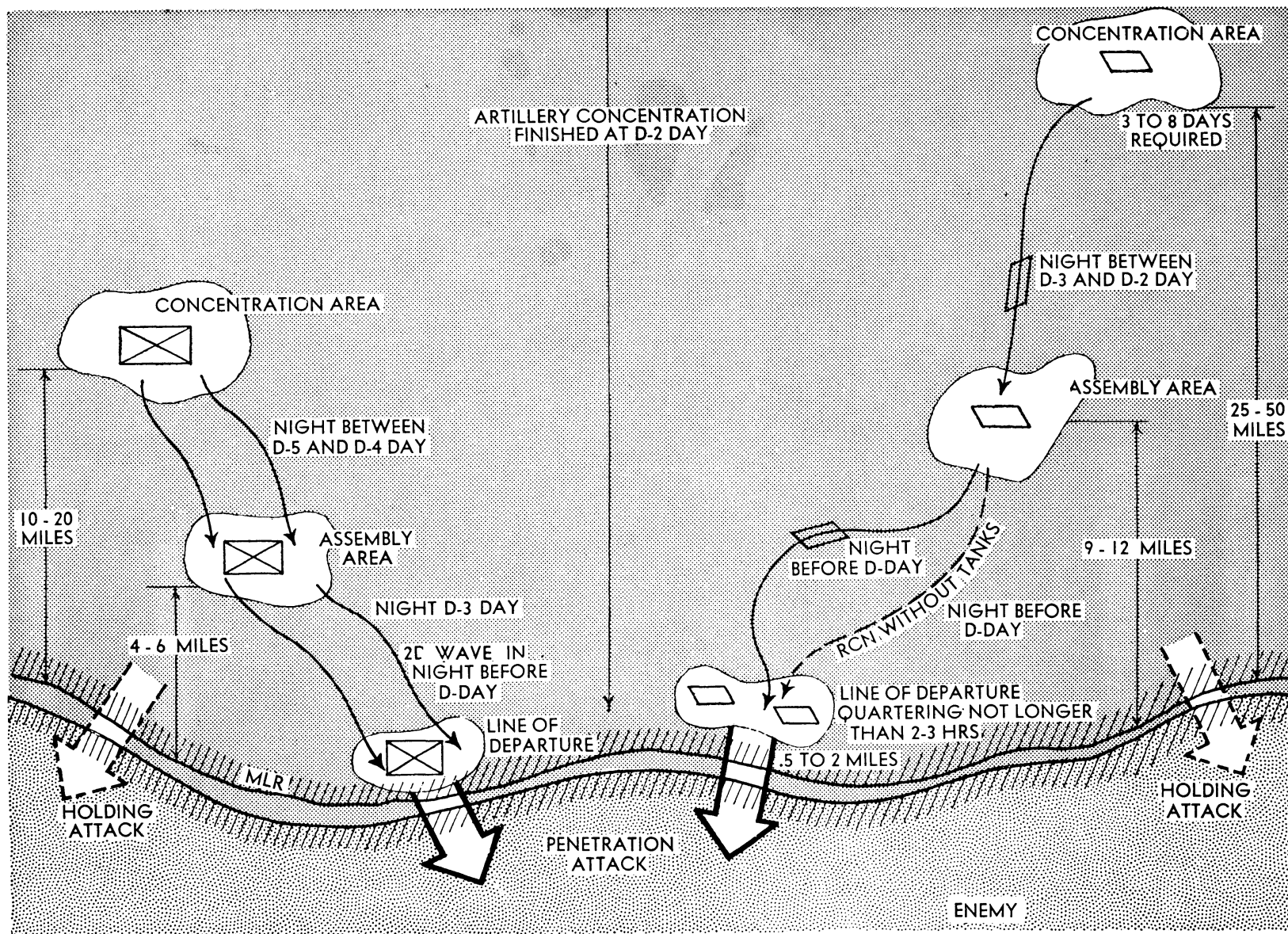


Figure 39. Concentration of armored forces and infantry for offensive operations.

units, and infantry patrols conduct intensive uninterrupted operations in the break-through sector. Specific information vital to the armored force offensive is obtained by ground observation of engineer and tank reconnaissance units. This information includes:

Terrain throughout the enemy defensive depth with respect to the maneuver of armored units.

Location and extent of the enemy fortifications strongpoints (especially antitank-gun emplacements) and troop dispositions.

Routes of withdrawal available to the enemy.

Air reconnaissance supplements this information by determining the possible directions of enemy tank counterattacks, the location of tank reserves, and other pertinent data. The various artillery reconnaissance groups and observation posts determine the location of artillery targets and firing plan of the artillery offensive.

b. Fire preparation phase. This phase varies in duration from several hours to several days, depending entirely on the extent of the enemy defensive position. The tank corps attacks independently only in a sector where enemy defenses are relatively weak. Then a short intensive artillery preparation, immediately followed by the tank assault, combine the shock power and surprise necessary to achieve a break-through. Otherwise, an extended infantry-artillery attack is necessary to breach the enemy defensive position. Large armored formations move forward from the concentration area to the assembly area, which is 9 to 12 miles from the enemy front lines, prior to the period of artillery preparation. This movement is made by echelons during the night between D-minus 2 and D-minus 3 days.

c. Assault phase. During the period of artillery preparation on the night before D-day, the armored formation advances to its jump-off position, located from $\frac{1}{2}$ to 2 miles from the enemy front line. Assault groups are organized from infantry, engineers, and tanks for infantry support. These groups vary in size from infantry companies to regiments and are supported by tanks from independent battalions, regiments, and brigades. Coordination between elements of the assault groups, the following echelons, and supporting artillery is worked out in detail. The mission of the assault group is to destroy enemy firing positions and fortifications which the

artillery preparation failed to neutralize, and to clear lanes in minefields.

The first echelon of medium tanks follows immediately behind the assault groups, together with mine-clearing tanks which clear lanes through minefields, and attacks enemy positions by direct fire and flank maneuvers. The first infantry echelon follows the tanks at a distance of 200 to 400 yards. The second echelon of tanks consists of heavy tanks and self-propelled artillery moving behind the infantry at a distance of 100 to 200 yards. These tanks and self-propelled artillery support both the infantry and the medium tanks of the first echelon. The artillery-support group and the second infantry echelon follow behind the heavy tanks (fig. 40).

Enemy defensive positions, 3 to 5 miles deep, often consist of multiple belts containing lines of trenches and numerous strongpoints. The immediate objective of the infantry-support tank group, together with the first infantry echelon and assault groups, is to seize the first two trench lines of the forward defense belt. The immediate objective of the infantry group (infantry strength of about one division) of the first corps echelon is to penetrate the entire forward defensive belt, including enemy battalion reserve positions and all strongpoints between the forward and the second defense belts. Successive missions of the group, reinforced by armor and infantry of the second corps echelon, are to penetrate the second and remaining enemy defensive belts. The assault of an armored corps takes place on a sector not less than 3 miles wide. Tanks in the first echelon move in bounds from phase line to phase line, from 1,000 to 2,000 yards apart.

d. Securing the offensive. The closest contact is maintained between combat arms of each echelon and with supporting echelons, in order that enemy counterattacks may be effectively repulsed by tanks and self-propelled artillery. The speed of the offensive is maintained by centralizing the control of self-propelled artillery in support of tank battalions when enemy counterattacks are imminent. Infantry with engineers, supported by mortars and artillery support groups, seize and fortify all vital positions on the flanks of the break-through area. Enemy firing positions on the flanks are neutralized, and hasty mine belts are placed across flank approaches. Flank security groups organize road blocks, covering the approaches by artillery and mortar fire.

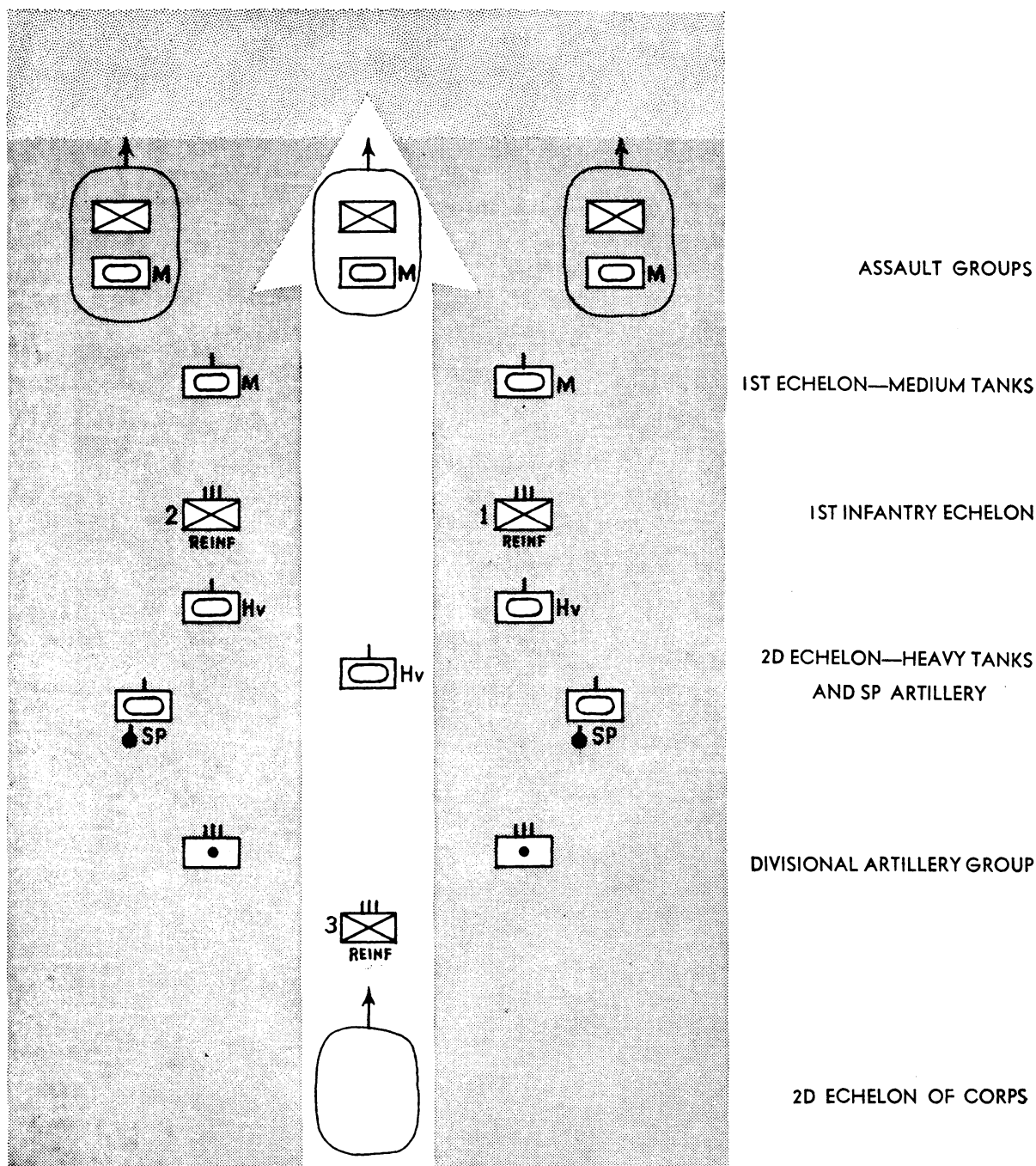


Figure 40. Combat formation of tank-supported infantry in the first phase of break-through operations.

The second echelon of the tank or mechanized corps similarly organizes strong flank protection and may use rockets as well as mortars and artillery to repel enemy infantry attacks. As the offensive penetrates deeper into enemy defenses, screening groups supplement flank security groups to facilitate rapid forward movement of motorized infantry and supply trains (fig. 41).

e. Exploitation. The tank corps in exploitation advances rapidly toward a series of terrain objectives such as crossroads, bridges, and dominant terrain features. Enemy lines of communication are cut, supply dumps are seized, and the enemy is attacked on the flanks and rear with the intent of cutting enemy units into many segments which are encircled and destroyed. If several break-throughs

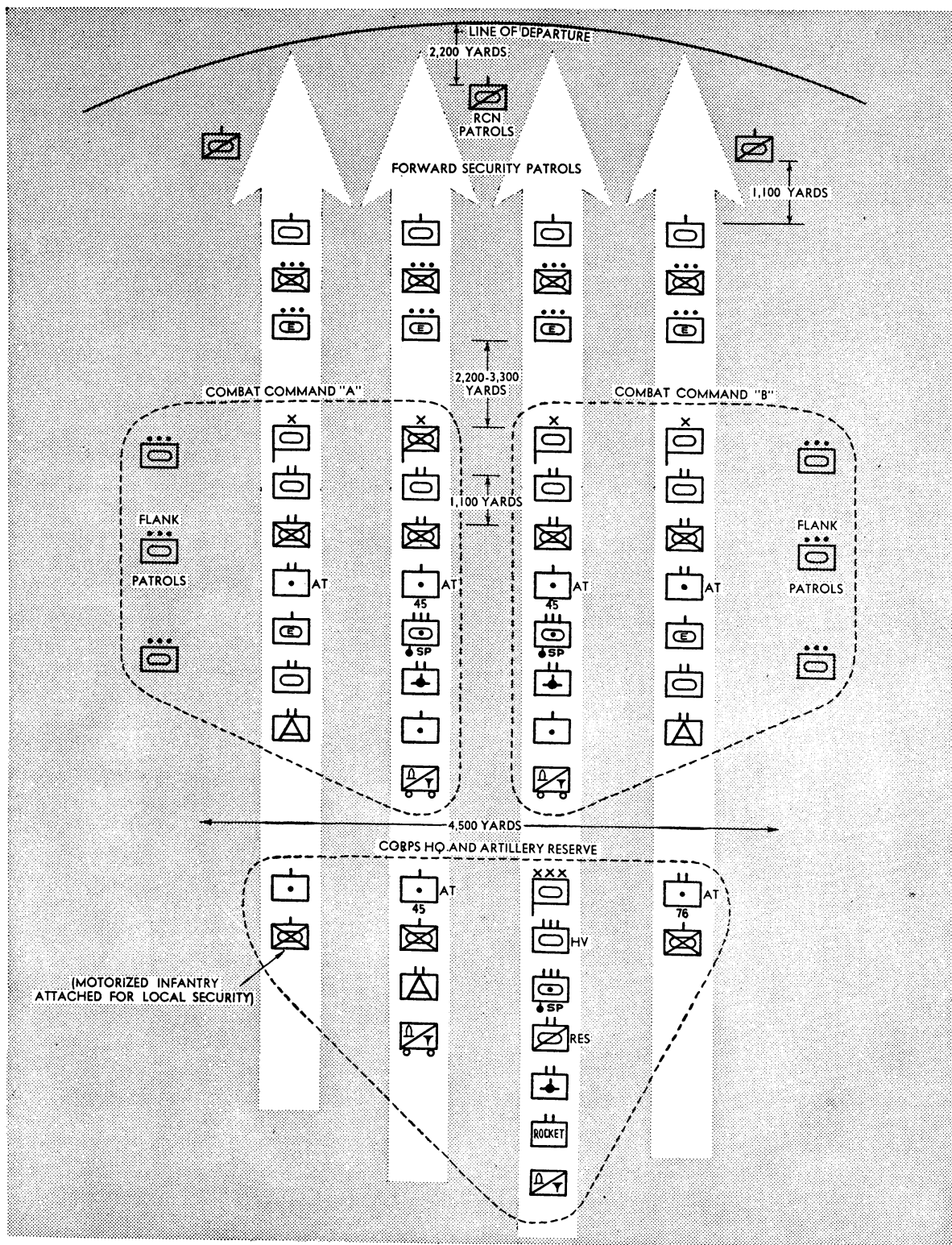


Figure 41. The corps organization in an approach march.

are made, the tank forces exploiting each converge in a double envelopment.

ADVANCE UNITS. In exploitation the tank corps sends forward the bulk of its tactical reconnaissance units, including the armored car reconnaissance battalion and the motorcycle battalion, often reinforced by a tank company. The group operates 10 to 15 miles in advance of the medium tanks in the first echelon. The security reconnaissance detachment of each tank brigade operates 6 to 9 miles in advance of the brigade and consists of motorcyclists, motorized infantry, armored cars, and a tank platoon sometimes reinforced by antitank guns. The reconnaissance detachment of the motorized infantry battalion operates 3 to 4 miles forward and consists of a squad of motorcyclists or motorized infantry. Flank security detachments, drawn from the reconnaissance reserves, are used for flank defense and to destroy by-passed strongpoints. They consist of a platoon of tanks, armored cars, and a squad of motorized infantry and engineers.

The mechanized corps has far greater capabilities for extensive exploitation than the tank corps, due to the powerful motorized infantry component which is added to its armored strength. The mechanized corps invariably has been employed in every major offensive operation, not only to exploit breakthroughs but to develop the break-through into pursuit. Air support of armored units has progressively increased with Soviet air supremacy and the close coordination of these arms has resulted in more rapid penetration and encirclement of enemy positions.

EXPLOITATION OBJECTIVES. During the exploitation period, mechanized units encounter the enemy's tactical reserves and also rear reserves rushed up by motor, rail, or even air. Therefore, in the process of exploitation mechanized units have to carry out bitter actions, sometimes to defend themselves, sometimes to disengage themselves. All actions are carried out with the following goals in mind: to retain the initiative, to defeat the pursued enemy in detail, and to surround and destroy his reserves after cutting them off. The job of complete liquidation is left to regular front-line troops, while the mechanized units go on to exploit the new success.

PURSUIT. This strategy is organized in accordance with the possible routes of enemy withdrawal, the terrain features, and indications of enemy withdrawal prior to the disengagement of his main

forces. Soviet units selected for pursuit are very mobile and capable of independent action. The basic composition of each detachment includes medium tanks, reinforced by assault troops with automatic weapons, motorcyclists, motorized infantry, artillery, and engineers. Parallel pursuit is emphasized in Soviet doctrine. Enemy rear guards and organized defensive positions try to turn parallel pursuit into a pursuit from the rear; thus parallel pursuit consists of a series of actions, partly frontal and partly flanking. Advanced detachments delay and hold up the enemy's withdrawal in order to give the main forces an opportunity to overtake and destroy him (fig. 42). At the same time, advanced troops, who have penetrated to the rear of the withdrawing enemy, attack command posts, destroy supplies, rupture communications, and create panic by surprise thrusts.

The main body operates on the flank of the withdrawing enemy or in the space between withdrawing columns. The combat formation of the main body covers the area of the main effort. Strong reserves, consisting of tanks, self-propelled artillery, and motorized infantry, are held in readiness to engage enemy reserves which may be committed. If separate strongpoints succeed in resisting direct assaults, the main body by-passes them, leaving motorized-infantry groups to cover such strongpoints until the arrival of troops following the mechanized corps.

Air support is considered vital to successful pursuit operations. Air action destroys enemy reserves advancing to engage the pursuing forces. Stormovik units are especially effective in giving close support to advance detachments. Pursuit must be maintained night and day, stopping only on orders of the Commander or when fuel supplies are exhausted. Every expedient is used to maintain supplies, including mobile corps supply units, air drops, and captured enemy supplies. Fresh troops from the armored corps reserve are held in readiness to be sent forward on combat reconnaissance missions.

5. MEETING ENGAGEMENT

The deployment of Red Army armored units in a meeting engagement varies greatly, depending upon enemy strength. During pursuit, counterattacking enemy rear guards are repulsed by combat reconnaissance groups reinforced by medium tanks, self-propelled artillery, mortars, rockets, and motorized infantry of the first echelon. The main body continues the pursuit without deploying its forces,

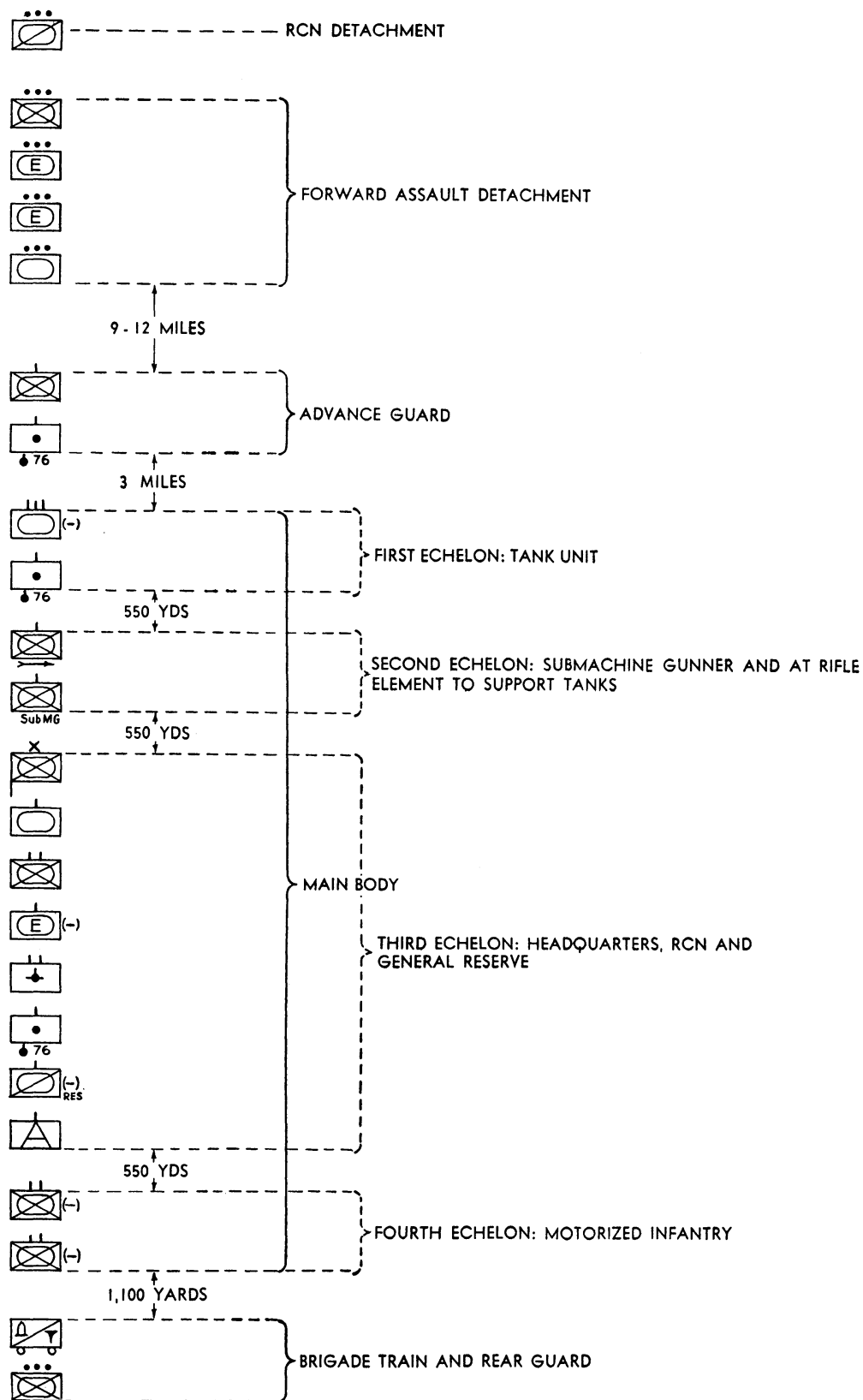


Figure 42. Mechanized brigade organization in pursuit.

although other combat reconnaissance units will be organized to replace the units detached.

When superior enemy forces are encountered, a powerful combat group of tanks and self-propelled artillery assaults the forward enemy elements in a short thrust designed to permit the mechanized corps to deploy in a favorable defensive position.

The corps deploys along a wide front with combat groups occupying separate, favorable terrain features. The groups are organized for hasty defense, with infantry supported by artillery, mortars, and self-propelled guns in the forward echelon, while the tanks are assigned to the second echelon as reserves and for defense of the rear. Motorized infantry occupies the gaps between strongpoints, which are also covered by artillery and mortar fire. The corps reserve deploys to the rear of the position, ready to move against any likely direction of enemy attack. Air reconnaissance and the advance reconnaissance group, 9 to 15 miles ahead of the advance guard, give armored formations timely information concerning enemy strength, movements, and dispositions. This information enables the formation to deploy to greatest advantage in the meeting engagement.

6. THE DEFENSIVE

In independent operations, the tank corps and the mechanized corps are frequently counterattacked by superior enemy forces, especially after deep penetrations following a break-through. The defensive mission generally is to hold seized territory against enemy counterattack until the combined forces following the armored units arrive to secure the area.

a. Tank corps. The tank corps is limited in its capacity for protracted defense. The infantry component of the corps is relatively small, and tanks used in fixed positions are not as efficient as when their high mobility and shock power are fully employed. The self-propelled artillery, antitank guns, mortars, and rockets are the core of defensive strength; but superior enemy infantry units, supported by armor and artillery, can force the tank corps to withdraw by outflanking the defensive position. Soviet doctrine emphasizes the tank corps has not sufficient infantry to risk encirclement for any length of time. The mechanized corps, on the other hand, is well organized for independent action far forward of the advancing main forces and passes from the offensive to the defensive in every major operation involving deep offensive thrusts into enemy territory.

b. Mechanized Corps. The organization of defenses by the Soviet mechanized corps is as thorough as its combat potential, favorable terrain, the strength of enemy counterattacks, and time permit. Extensive mine belts and fields are laid by engineers; antitank gun positions and mortar positions are emplaced in a fire system integrated with self-propelled artillery and rocket launchers. All firing positions, infantry positions, and transport vehicles are camouflaged to the fullest degree. A second defensive position to the rear is developed as thoroughly as time permits, at the next tactically advantageous area.

The mechanized corps can resist enemy attacks from an encircled position for several days. If the position to be held is of great tactical value, the mechanized corps remains in position, permitting the enemy to effect an encirclement, rather than withdrawing. This is achieved with the expectation that advancing strong, friendly forces will relieve the mechanized corps within a reasonable time.

The defensive position consists of groups of motorized infantry in separate strongpoints located in advantageous terrain. Each group contains about a battalion of infantry supported by two or three batteries of antitank artillery, mortars, and self-propelled artillery and tanks. The self-propelled guns and tanks are distributed within the groups in accordance with the most likely avenues of enemy approach and the terrain cover available. Three tank reserve groups consisting of medium and heavy tanks are held in centralized, concealed areas. Their mission is to counterattack enemy forces which penetrate into the defenses through the gaps between the strongpoints. The gaps are held lightly by motorized infantry but are covered by artillery fire from adjacent strongpoints, as well as by the corps artillery group deployed to the rear of the tank reserve group. The corps reserve, together with all supply echelons, is in the rear area of the defensive position and is protected by the remaining tank units from flank and rear attacks. Forward defenses in two echelons are most effective, provided sufficient personnel strength is available. Successful defense is largely dependent upon the efficient operation of the tank reserve groups which cover a wider front than the first defense echelon and must be ready to attack enemy forces at all points of penetration (fig. 43).

The defensive strength of the mechanized corps is greatly increased by the attachment of a howitzer regiment. The strength of air support and expec-

tations of supply by air greatly influence the corps commander's decision to hold a position or to withdraw. The antiaircraft regiment deploys its guns to protect the main body of the corps from hostile

armored formation is held in a concealed centralized position 10 to 30 miles to the rear of the first infantry echelon. When the direction of the enemy main effort is determined, the armored formation

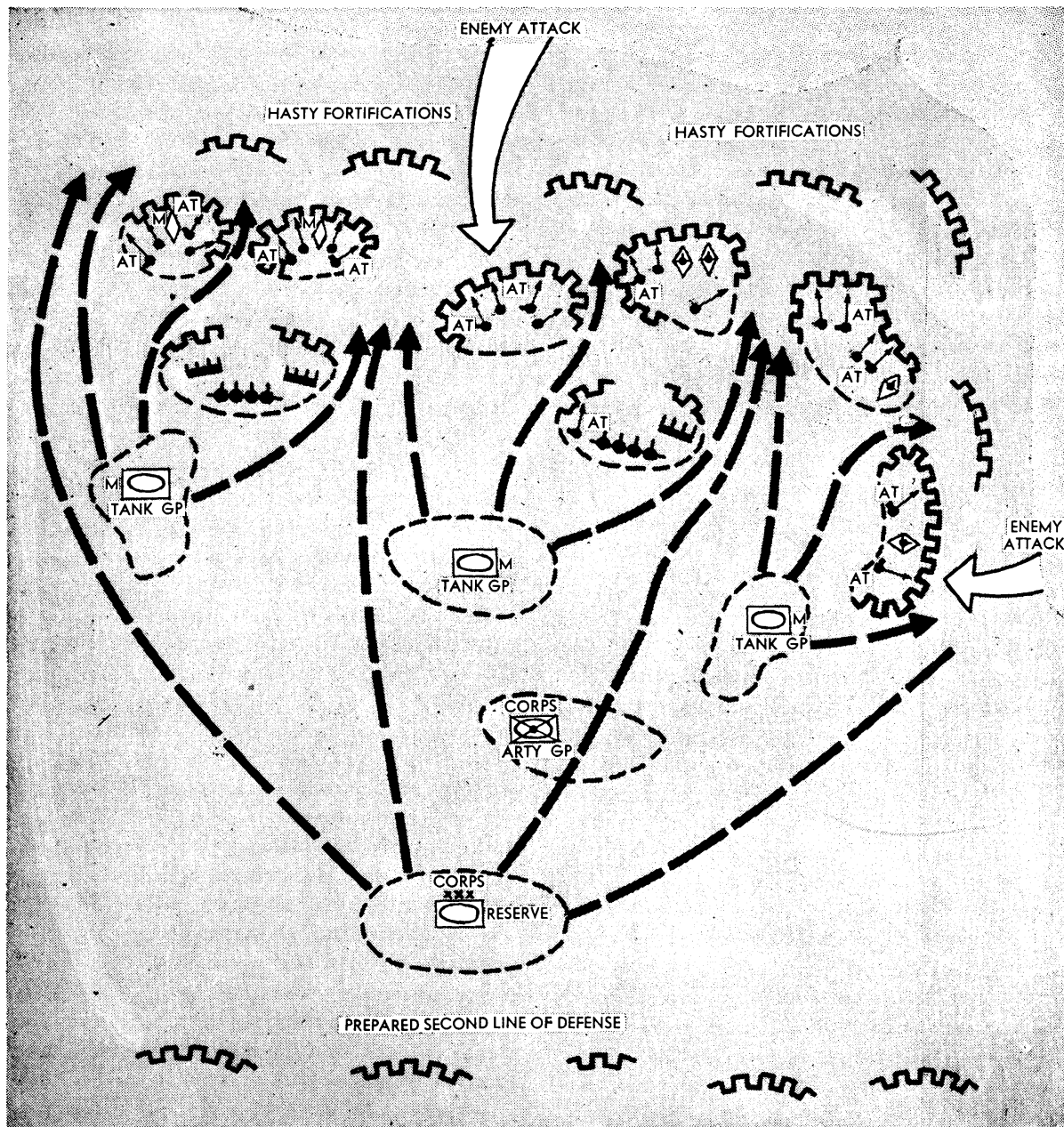


Figure 43. Defensive position of a mechanized corps.

air attack. Antiaircraft artillery is also given the role of covering the gaps between strongpoints where enemy ground forces are likely to penetrate.

c. Other defensive tactics. Armored units, supporting infantry in decentralized systems of defense, are used as mobile counterattack groups. The

moves forward in a wide flanking maneuver and attacks the enemy's flank and rear.

Another type of ambush defense is used when a fluid situation exists and defensive positions have not been firmly organized. Tank units concentrate in concealed areas adjacent to main approaches

along which enemy forces are advancing. Terrain conditions determine whether two groups of tanks in flanking positions or one concentrated group is better suited to deliver sudden flank attacks against enemy assault spearheads. Tank-riding automatic riflemen and self-propelled guns support the tanks in destroying the enemy assault elements. The mission of armor in this type of Soviet defense is to protect infantry units withdrawing under enemy pressure, as well as to inflict the maximum losses on the enemy and thus disrupt his offensive operations.

7. WITHDRAWALS

If possible, withdrawals are executed at night, and to prepared positions. Daytime withdrawals are made under the cover of a smoke screen. Soviet daytime withdrawals often coincide with a sudden limited counterattack of a strong tank group, supported by self-propelled artillery, in the direction of the enemy main effort. Soviet doctrine prescribes that withdrawals be executed rapidly by echelons, without lessening normal artillery fire. Mobile armored groups cover the withdrawal by counterattacks if the enemy attempts to interfere.

Section IV. CAVALRY

1. CAVALRY MISSIONS AND CAPABILITIES

a. Basic doctrine. The Red Army has retained the cavalry arm for use as an independent striking force. The fundamental doctrine in the employment of cavalry stresses that cavalry is not a substitute for mechanized forces but is a powerful force for operations where motorized units are handicapped by impassable terrain. By Red Army definition, the cavalry is capable of independent operation, of taking part in every kind of engagement, and of carrying out actions in every kind of cooperation with other arms. A basic difference between Red Army cavalry tactics and U. S. cavalry doctrine is the stress placed by the Soviets on the employment of artillery with cavalry. Divisional artillery operating with cavalry is employed under centralized or decentralized control, depending on combat requirements. The primary mission of divisional artillery is the neutralization of enemy antitank guns, personnel, machine-gun positions, and similar ground targets.

The tactical employment of cavalry in night operations and in terrain impassable to motorized elements such as swamps, steppes, and deep snow was

repeatedly and successfully carried out by the Red Army in World War II.

b. Capabilities. Cavalry averages 5 miles per hour over severe terrain. Small independent cavalry units cannot maintain continuous movement for more than 3 days under combat conditions. Large units with sizable supply trains and established resupply systems can operate for more than a month over distances of 100 miles. Whenever possible, cavalry forces attempt to strike the enemy flank or rear, and to encircle and destroy the main group in cooperation with the air forces, armored units, airborne units, and frontal assault groups. Other cavalry missions include: large-scale raids by cavalry divisions and corps, especially during the winter; the screening of troop movements of other arms; and the execution of counterattacks against the enemy flanks and rear from concealed areas in the rear of a defensive position.

Soviet cavalry raids extend to far greater depths and are made by larger forces than are envisioned by the definition of a raid in U. S. cavalry doctrine. For example, Lieutenant General Sokolov's VI Guard Cossack Cavalry Corps made a 135-day raid and fought behind the enemy lines most of the time.

c. Cavalry in auxiliary role. The tactical employment of small cavalry units for reconnaissance, counterreconnaissance, screening, and patrol missions is essentially the same in the Red Army as in other armies. Emphasizing the cavalry's surprise potential, however, the Soviet's place added significance on more extensive employment of night reconnaissance and night raiding parties, especially when terrain and weather are favorable to cavalry tactics. Assaults are generally made dismounted from all sides after rapid and secret flanking movements have been executed (fig. 44). Heavy machine guns—mounted on carts—light machine guns, and submachine guns constitute the greatest fire power of small cavalry units.

Normally, a cavalry regiment operates from 1 to 3 days in a local area up to 15 miles in depth. The objectives are local enemy command posts, artillery or antitank batteries, small relatively undefended garrisons in the enemy rear, and the capture of prisoners.

2. CAVALRY UNITS AND BASIC WEAPONS

Red Army cavalry was modified greatly before and during World War II. The cavalry divisions have shrunk to a strength of 4,645 officers and enlisted men, losing their mechanized regiment and one of

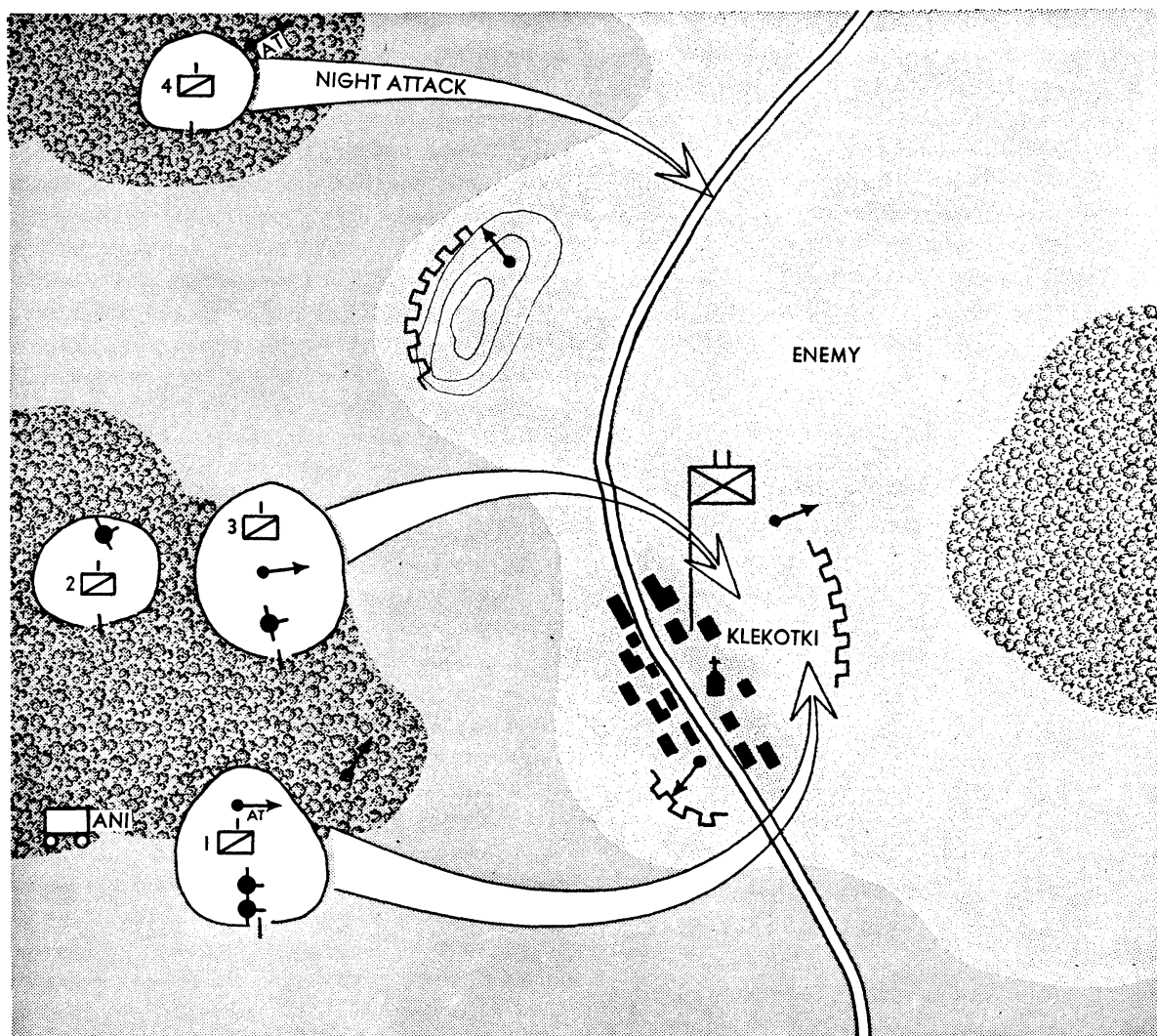


Figure 44. Cavalry regiment attack in winter.

their horse regiments. Medium and heavy mortars, and submachine guns have been introduced in large numbers. The number of antitank guns has been increased. The introduction of antitank rifles has further facilitated close antitank and antiaircraft defense. The normal operating unit is the cavalry corps, which consists of three cavalry divisions, two to four tank regiments of 41 tanks each, an antitank regiment, either a composite artillery regiment or a mortar regiment, and a rocket battalion. Additional tank reinforcements are normally added for large-scale operations.

Cavalry units are well equipped to protect themselves against enemy armored attacks, although their staying power under such circumstances is limited. The 14.5-mm long-barrelled antitank rifle carried by pack horse provides antitank protection within

the squadron. The horse-drawn 45-mm gun is the regimental antitank weapon, while the 76-mm field artillery pieces, as well as the 120-mm mortar batteries, are brought into play where necessary. The Corps has considerable protection against enemy armor in the 76-mm gun antitank regiment, the self-propelled artillery regiment, and the composite artillery and mortar regiment. The rocket battalion and the mortar units provide effective antipersonnel fire.

The vulnerability of cavalry to air attack is the greatest single weakness of cavalry units. To counteract this vulnerability, the cavalry division has been strengthened in antiaircraft fire power to nine multiple antiaircraft machine guns and six 37-mm antiaircraft guns, while the corps is reinforced by an antiaircraft artillery regiment in operation

where enemy air attacks are likely. As the relative strength of the Soviet Air Force increased, cavalry operations were given effective fighter support by the air forces of the army group. In some instances, supporting fighter units have been attached to the cavalry corps. In the first case, an aviation liaison officer maintains continuous liaison between the corps and the army group headquarters, whereas in the second case no such liaison exists. Night marches are stressed for cavalry, especially in winter, with movements planned to conceal the cavalry during the day in such covered or camouflaged areas as collective farms.

General Belov's cavalry corps inflicted great losses on superior enemy forces in the autumn of 1941 by moving at night and striking the enemy rear at dawn. Two German divisions were surrounded and partly destroyed by this corps in October 1941. During that winter, the cavalry corps engaged in extensive offensive operations under severe winter conditions of cold and deep snow, traveling 30 to 40 miles a day across enemy lines of communications. When necessary, dismounted combat against fortified positions was undertaken. Although at first the offensive succeeded in destroying many enemy positions, later large losses were suffered by the corps when it was itself encircled, primarily due to powerful enemy air attacks which destroyed the corps supplies and artillery positions.

This again stressed the vulnerability of cavalry to air attack, especially in winter.

3. COORDINATION WITH OTHER ARMS

Coordinated operations of cavalry forces with large tank units have been developed by the Red Army where the terrain and season are suitable. This cooperation may take different forms. In some instances these large units, while executing the complete mission by joint efforts, operate independently but coordinate their blows. In other cases the tank groups are attached to the large cavalry unit whose commander assigns missions to each tank group. Finally, a situation may occur when both types of cooperation, operational and tactical, takes place at the same time. A part of the tank forces execute their missions independently, while the balance is attached to and operates with the cavalry.

An outstanding operation in which cavalry and tank forces were employed successfully was the encirclement and capture of the German garrison at Taganrog in August 1943 (fig. 45). In this operation the cavalry units followed the tanks which had

broken through the enemy lines. After entering the gap, the cavalry moved rapidly towards the Sea of Azov to encircle the enemy garrison at Taganrog. The tank units moved in two groups, covering the flanks of the cavalry against enemy counterattacks by mechanized German relief units as well as from the encircled enemy group. All other Soviet tanks were attached to the leading cavalry division; these tanks moved ahead of the cavalry and paved the way by overcoming scattered enemy detachments. Wherever enemy resistance was strong, cavalry units dismounted and attacked with close support of tanks.

The massed artillery fire of all cavalry artillery was effectively used against strong enemy positions. Enemy counterattacks were broken by artillery fire and by maneuvering cavalry-tank groups against the enemy flanks. Complete success was assured by uninterrupted contact between the cavalry division commanders and the tank group commanders, as well as by powerful air support which destroyed enemy artillery positions and armor and also provided cover against hostile air attacks (up to 1,200 sorties were flown daily).

Self-propelled artillery regiments work especially effectively with cavalry in deep penetrations and flank operations. Self-propelled artillery has supported cavalry in extensive Red Army maneuvers across swampy terrain, covering as many as 125 miles in 2 days. One of the most important tactical cavalry maneuvers is to establish and to hold road blocks on highways over which the supporting self-propelled artillery must pass. Cavalry executes wide outflanking maneuvers across swamps to attack enemy artillery from the rear; then the self-propelled guns advance over the secured highway. Cavalry moves on both sides of the artillery units for protection against possible flank attacks. Whenever enemy guns or small fortified areas are encountered, the self-propelled artillery quickly deploys and smashes the enemy with concentrated fire. Rapid transition from mounted to dismounted attack by cavalry units and uninterrupted liaison with self-propelled artillery are basic principles in effective pursuit operations. Attached engineer and ponton detachments greatly facilitate rapid movement of armor in such operations.

4. COORDINATED OFFENSIVE

a. Organization of attack. Cavalry is used to best advantage in coordination with infantry. In an offensive, the infantry holds the enemy with a frontal attack while the entire mass of cavalry and

tanks is thrown upon the flanks and rear of the enemy. The objective of cavalry is to strike at the enemy's flank and rear; disrupt his headquarters

main force and the direction of his main effort. The cavalry corps must be reinforced by infantry, tanks, artillery, and mortars, and held in a centralized po-

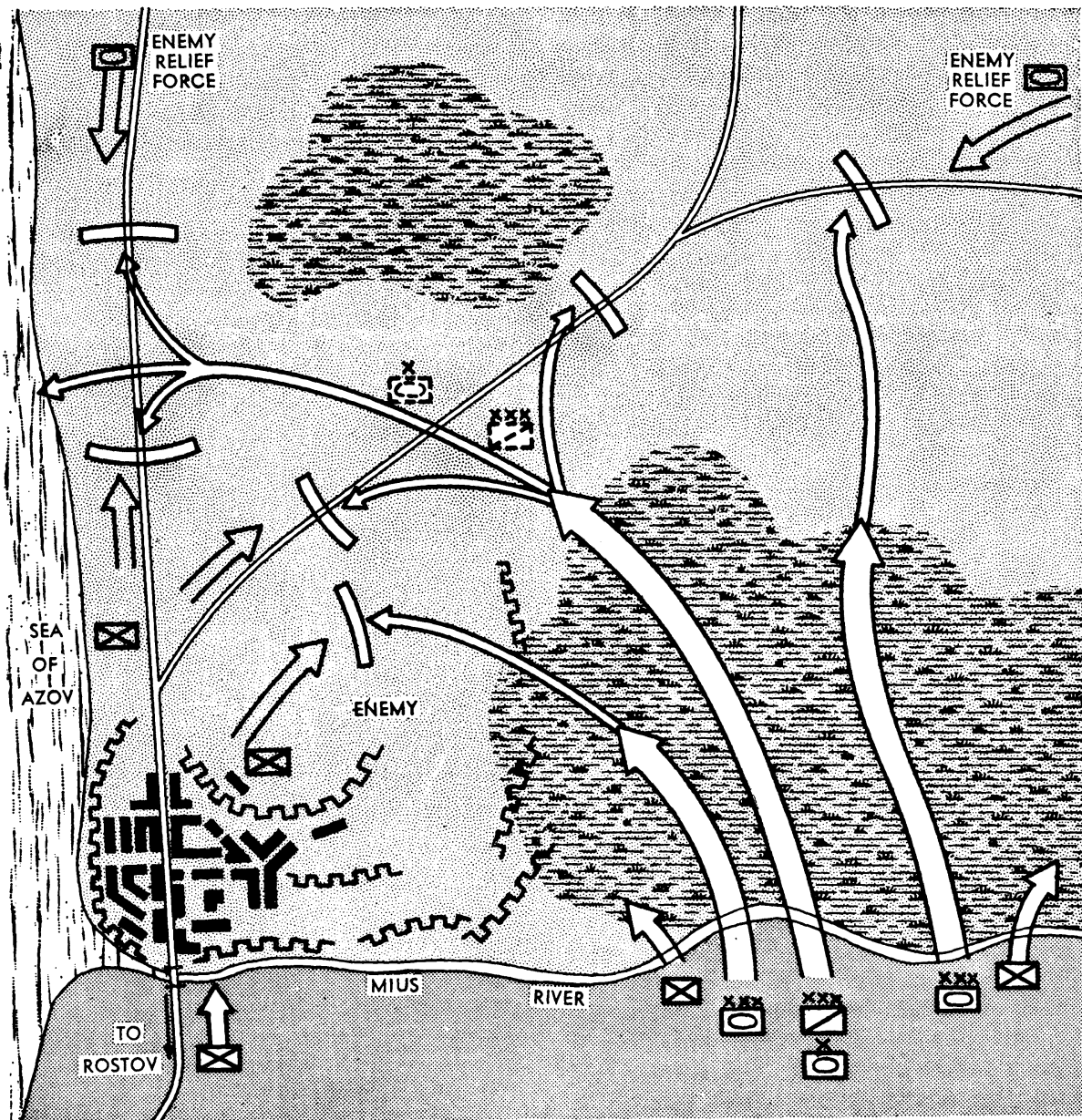


Figure 45. Cavalry-tank coordinated break-through to encircle enemy garrison at Taganrog.

and lines of communications; and encircle and destroy his main force. To accomplish this, the cavalry must utilize its mobility to the utmost. This is achieved by holding the enemy with a frontal attack by other arms; by restricting his maneuverability; and by determining the disposition of his

situation from where it can attack the enemy's flanks. It is considered advisable to locate the cavalry on the enveloping flank of the main attacking force with the missions of reducing the enemy's flanks and destroying his communications. The success of a cavalry operation, especially when it has pene-

trated into the enemy's operational depth, is conditioned by continuous coordination with the combined arms and tanks attacking frontally.

Red Army doctrine maintains that the expedient moment to commit cavalry is when the enemy's defenses in depth have been penetrated by a frontal or enveloping assault. The enemy is then forced to bring up his reserves. He is in a state of fluid defense, has not had time to organize any defensive positions, and is most vulnerable to a cavalry attack.

A successful operation depends not only on a well executed initial phase but also on the successive

Cavalry formations advancing on the flank of an assault group may use two types of attack: the "open flank attack" and the "interior flank attack" (figs. 46 and 47). In an open flank attack, coordination and liaison with troops attacking frontally is maintained only on one side, while in an interior flank attack, liaison must be maintained with both flanks, permitting cavalry to pass through the secured corridor. Coordination with units of adjacent sectors is limited to the initial phase.

The Soviet disposition of troops will depend on whether the corps attacks in an open flank or in an

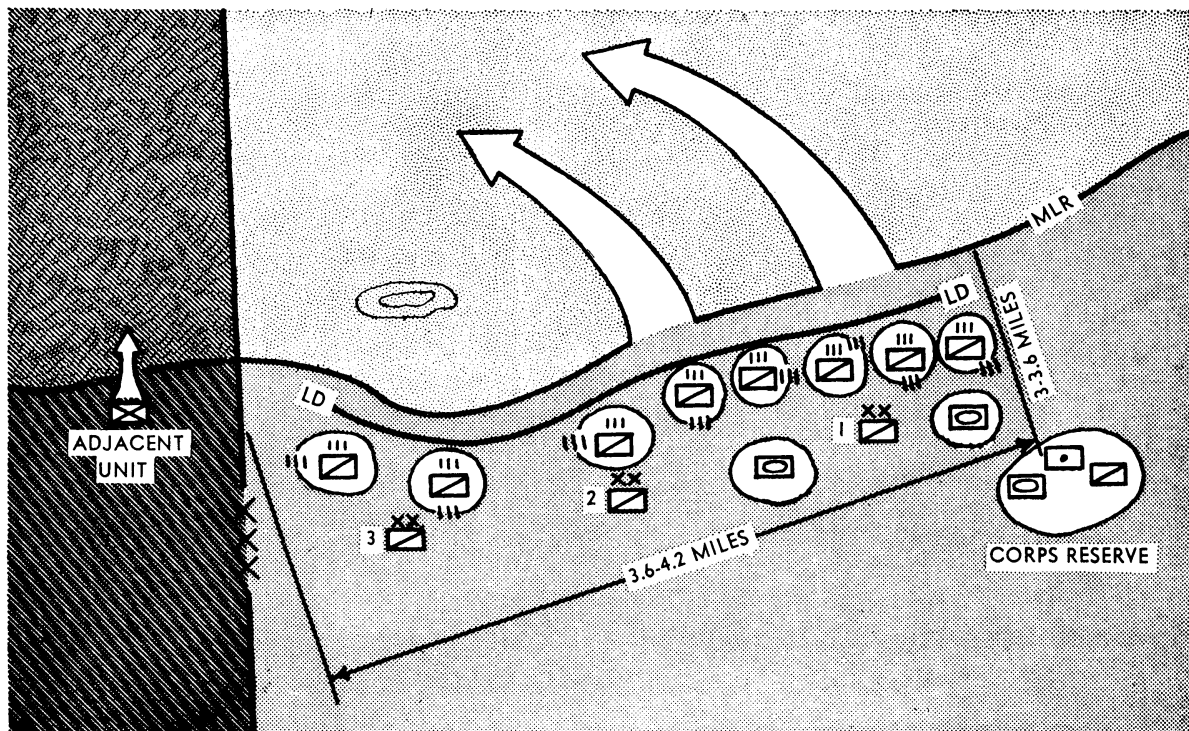


Figure 46. Cavalry corps attacking with an open flank.

phases. Cavalry units should not be restricted by boundary lines that reduce their mobility and force them into protracted combat for strongpoints. Therefore, in designating missions to the cavalry, the objective, the direction of the main effort, and time are indicated. The time factor is coordinated with the capabilities of units making the frontal assault, while the direction of the assault is aimed at operationally important objectives in the flanks, rear areas, and communication lines.

Essential considerations are air cover, liaison between army group and corps headquarters, secrecy of concentrations, thoroughness of reconnaissance, surprise, and continuous flow of supplies.

interior flank. In an open flank attack, the cavalry has more maneuverability during the initial phase and attacks on a wider front. The corps reserve is deployed on the open flank. In an interior flank attack, the corps attacks on a narrower front, is echeloned to a depth of 5 miles, and has a higher density of troop concentration. In this case the reserves will be used to augment the blow, and will be located to the rear of the main thrust.

b. Attack phases. COORDINATION AND PLANNING. A cavalry attack consists of several phases. During the initial or coordination and planning phase, the Soviet forces will secretly approach the assembly area. In this phase air cover must be

strong and is provided by the front and army fighter air units; one or two battalions of small-caliber antiaircraft artillery are attached for protection against hostile aircraft.

Concentration of cavalry takes place in areas 25 to 35 miles from the front lines, and should end 2 to 3 days before the start of the general offensive. Coordination with units attacking frontally, reconnaissance, line of departure, and engineer preparations are determined at this stage.

the corps is in the initial assembly area. Detailed and careful planning of coordination in this phase is the foundation of success in the initial assembly. Matters of supply are also determined during this initial phase. They assume particular importance since cavalry cannot depend on local supplies. In addition to ammunition, food, and fuel, cavalry requires large quantities of fodder. Any interruption in the supply of fodder will materially impair the mobility and combat value of cavalry. Both army

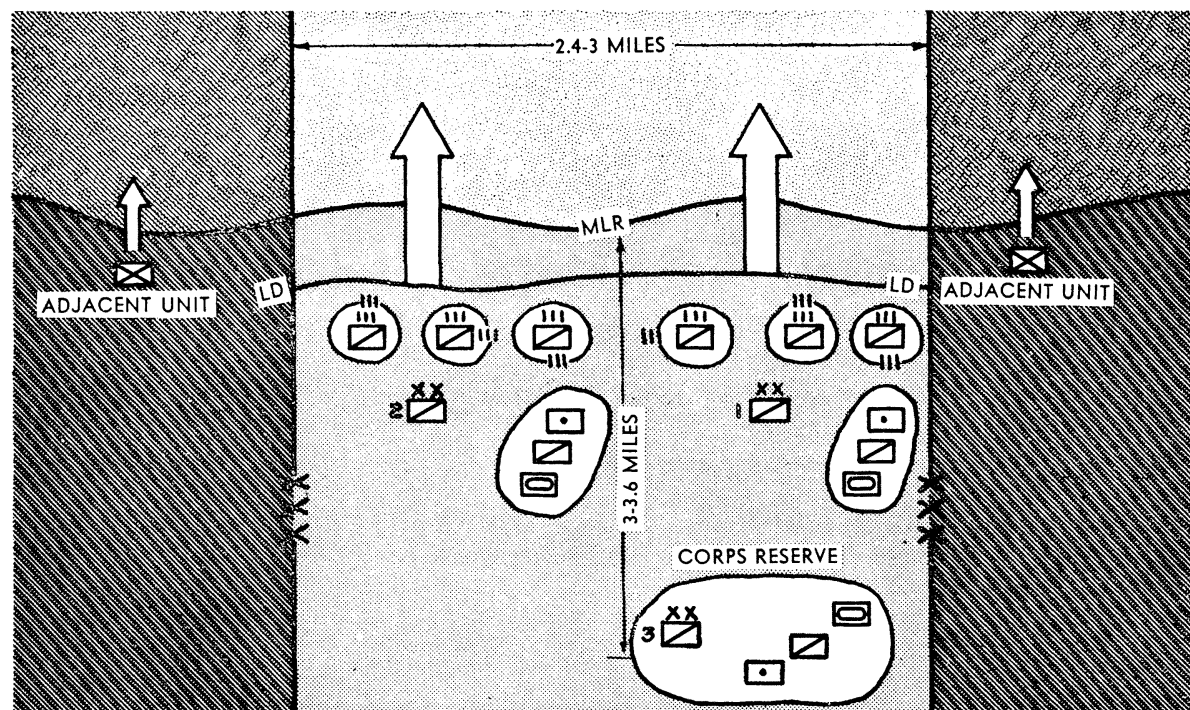


Figure 47. Cavalry corps attacking with covered flanks.

The corps commander must be acquainted with the following:

- Initial and successive objectives of infantry and tank units attacking frontally.
- Time of attack and boundaries, and direction of the main effort.
- Location of command posts and their axis of displacement.
- Methods of communication with command posts, and the signals to be used by units reaching designated phase lines.
- Assembly area of tank units, particularly GHQ tanks.

The corps commander's field order includes the above information and is issued after coordination with the chiefs of supporting arms during the time

group and army transportation facilities are widely used to insure a regular flow of supplies.

MOVING TO THE ASSAULT. Movement to the main line of departure for the attack is the second phase of an operation. The main line of departure is usually selected beyond the range of enemy artillery and mortar fire, although this distance should not exceed 7 to 10 miles. The formation adopted depends on the decision of the corps commander and should permit deployment against hostile air and tank attacks. The open flank attack is on a front 4 to 5 miles wide with three cavalry divisions abreast and the corps reserve deployed toward the outside of the turning movement. In the attack where both flanks are covered, the front is reduced to from 2.5 to 3.5 miles with two cavalry divisions in assault and the third division with corps reserve echeloned to

the rear. From the beginning, special attention is paid to continuous mobility, freedom of movement, and combat preparedness. To protect the formation against enemy artillery and mortar flanking at-

tinuous coordination are essential for cooperation between the cavalry and units attacking frontally.

LAUNCHING THE ATTACK. The third phase of the operation is the actual execution of the basic mis-

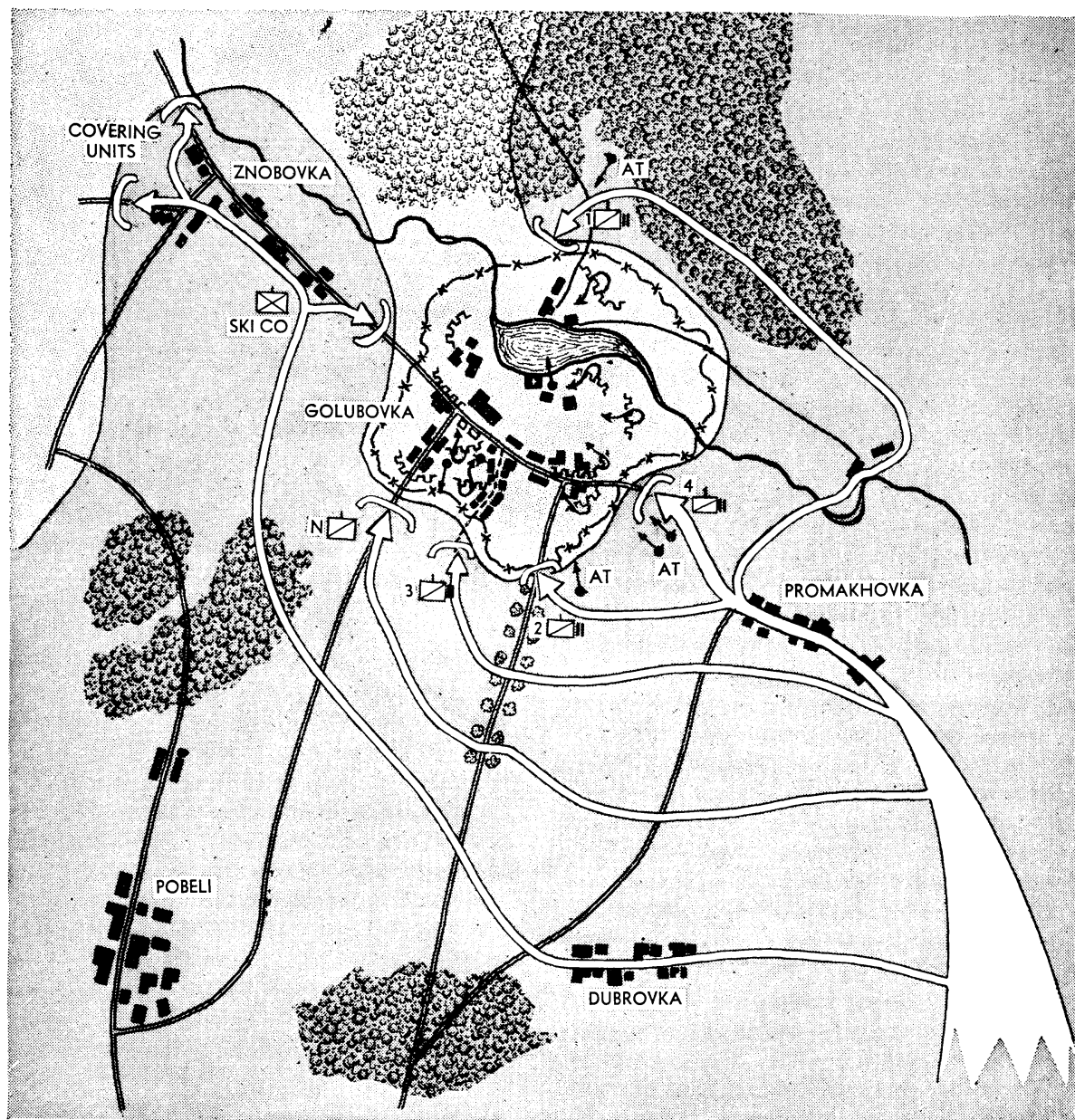


Figure 48. Reinforced cavalry regiment attack on a fortified town.

tacks, and also from infantry and tank counterattacks, air cover is provided and artillery is detached to protect the flanks. These units move as far as 5 miles from the flanks. Consolidation of forces is the primary consideration of the second phase. Timely exchange of information and con-

sion. Cavalry detaches itself from the troops attacking frontally and loses direct tactical contact; however, coordination must not cease. The cavalry seizes positions to prevent the main enemy force from extricating itself from encirclement. Part of the cavalry cuts the enemy's route of retreat, while

the main force, in coordination with units attacking frontally, encircles and destroys the enemy's principal units.

Liaison during the third phase of the attack is the responsibility of the army group command; without continuous liaison, coordinated action with cavalry is not possible.

5. CAVALRY IN PURSUIT

In exploiting a break-through, cavalry is well suited to execute parallel pursuit. Whenever enemy rear guards attempt to restrict cavalry activity to pursuit from the rear, wide outflanking maneuvers across swamps or rough country permit cavalry to strike at the flanks of the retreating enemy column or cut off his withdrawal by creating road blocks.

The supporting self-propelled artillery moves up to destroy enemy rear guard positions, while the cavalry seizes important tactical features in the enemy rear to secure highways over which the supporting Soviet artillery and other arms may advance more rapidly. Cavalry cannot hold terrain for long; therefore, motorized infantry and supporting arms must move forward rapidly to relieve cavalry units counterattacked by the enemy. The mobility and maneuverability of cavalry in sudden continuous flank attacks against withdrawing enemy are the basic elements of cavalry striking power. Mortars and machine guns mounted on horse-drawn carts supplement the automatic weapons carried by cavalry men. The striking power is considerable when tanks operate with cavalry. Artillery is the basic arm against enemy counterattacks, as well as in the assault of fortified positions and road blocks.

During pursuit operations, small cavalry units are detached to reduce important by-passed strong points—especially enemy supply centers—situated on vital lines of communication. Dismounted assaults are made simultaneously from all directions by squadrons reinforced by antitank guns, mortars, and automatic weapons (fig. 48). The assault group may be as large as a reinforced regiment to which self-propelled guns are attached to facilitate the destruction of enemy defensive positions. Sufficient striking power is given such assault units to clear the enemy from the position quickly, enabling the cavalry unit to rejoin the main body.

6. DEFENSIVE TACTICS

On the defense, cavalry covers withdrawals and protects the flanks and the gaps between units, inflicting losses on the enemy by sudden counterattacks upon

the flanks of enemy salients. Under extreme conditions, cavalry engages in dismounted defensive combat as infantry. In a decentralized defensive position, care is always taken to conceal horses in a defiladed area for safety and to facilitate withdrawal. In the defense of road blocks or tactically important terrain, artillery and mortars are basic defensive weapons relied upon by Soviet cavalry.

Section V. ENGINEERS

1. BASIC DOCTRINE

Engineer work in the Red Army regularly proceeds under rapidly changing combat conditions and in the face of limitations in the quantity and types of engineer equipment available; this is especially true of heavy construction and bridge building materials. These conditions serve to emphasize the importance of combat engineers (pioneers) and to demand from them efficient and speedy performance of a great variety of engineer tasks. In addition, the Soviets place a premium on detailed calculation of engineer capabilities, full exploitation of available equipment, development and perfection of engineer techniques, and constant coordination between the engineer arm and other arms, especially artillery.

The primary mission of the Soviet pioneer battalion is identical with that of the U. S. engineer combat battalion: to increase the effectiveness of the division in all phases of combat by general engineer work and to hinder the movement of the enemy. Due to the nature of combat on the Eastern Front—frequent German counterattacks, lesser reliance on friendly air cover, pressure of time in executing engineer missions—greater emphasis fell on mine laying, both in the offense and in the defense, on construction of hasty field fortifications, and on camouflage.

The Soviet divisional pioneer battalion is less than one-fourth the size of our combat engineer battalion, comprising 164 to 170 men as compared with 637. Since it is not motorized, when rapid movement of engineers is required, units are attached to other troops such as tank units or motorized infantry which provide transportation. Standard equipment is similar to ours—wire-cutters, grapnels, mine-detectors, shovels, saws, demolition sets, flame throwers, etc.—but there is less power-driven and more hand equipment.

The pioneer battalion of the mechanized corps is approximately the same size as our armored division engineer battalion, and is motorized for move-

ment into great depths in short periods of time. Each of the three motorized brigades in the mechanized corps has an engineer company of 121 men.

Specialized GHQ engineer units—independent battalions, regiments, and brigades—are used extensively in the Red Army for reinforcement, and particularly with infantry, for the assault of fortified positions. Light and heavy ponton regiments are respectively comparable to the U. S. engineer light ponton company, which may be attached down to divisional level when necessary, and to the heavy ponton battalion, which may be attached to corps or army. There also are other special GHQ units—such as camouflage—similar to ours in function.

The employment of army and corps construction engineers, operating to the rear of the infantry divisions and executing heavier and more complicated engineer work, is identical to ours. The use of local labor in construction work is common in rear areas.

2. OFFENSIVE OPERATIONS

a. Reconnaissance. Soviet doctrine stresses the importance of thoroughly planned and efficiently executed engineer reconnaissance. The organization of engineer reconnaissance varies, however, with combat conditions and with each specific situation. Thus, no Soviet organization can be considered typical. The following examples serve to indicate the saturation of elements for engineer reconnaissance and the importance attached to it, especially in the offensive (fig. 49):

During the period of preparation for a breakthrough of enemy defenses, partially located on the bank of a river, the engineer staff of a Soviet army group composed a plan of engineer reconnaissance and assigned to supervising staff officers missions and areas of responsibility. Reconnaissance objectives included enemy installations and obstacles on the front line, the presence of escarpment, and of breaks in the ice; the nature, extent, and areas of defensive constructions; sectors accessible to tanks, etc. It was conducted chiefly by observation. On a front of $8\frac{1}{2}$ miles, 20 forward observation posts were operated, 10 of which were manned by engineer commanders.

A systematic reconnaissance of the ice in the areas of possible crossings was also undertaken; reconnaissance groups of six to seven men were sent out to discover mined sectors. Some minefields were located by interrogation of prisoners and by mine

tracers or indicator movements or sounds; the enemy defense system was photographed from the air. This was done three times during the period of preparation for attack so that changes in the arrangement of enemy defenses could be observed and provided for. During the period of movement through the defensive zone of the enemy, two mobile engineer posts with four men each were organized for the first echelon of each division. In several sectors special pioneer groups—each composed of six to eight men—were sent out for mine and obstacle reconnaissance. Two to three pioneers were also allotted to each reconnaissance group of combined arms. Reconnaissance in the second echelon of troops was conducted chiefly for the discovery of mine obstacles on the roads and road shoulders, and for providing passage for heavy tanks.

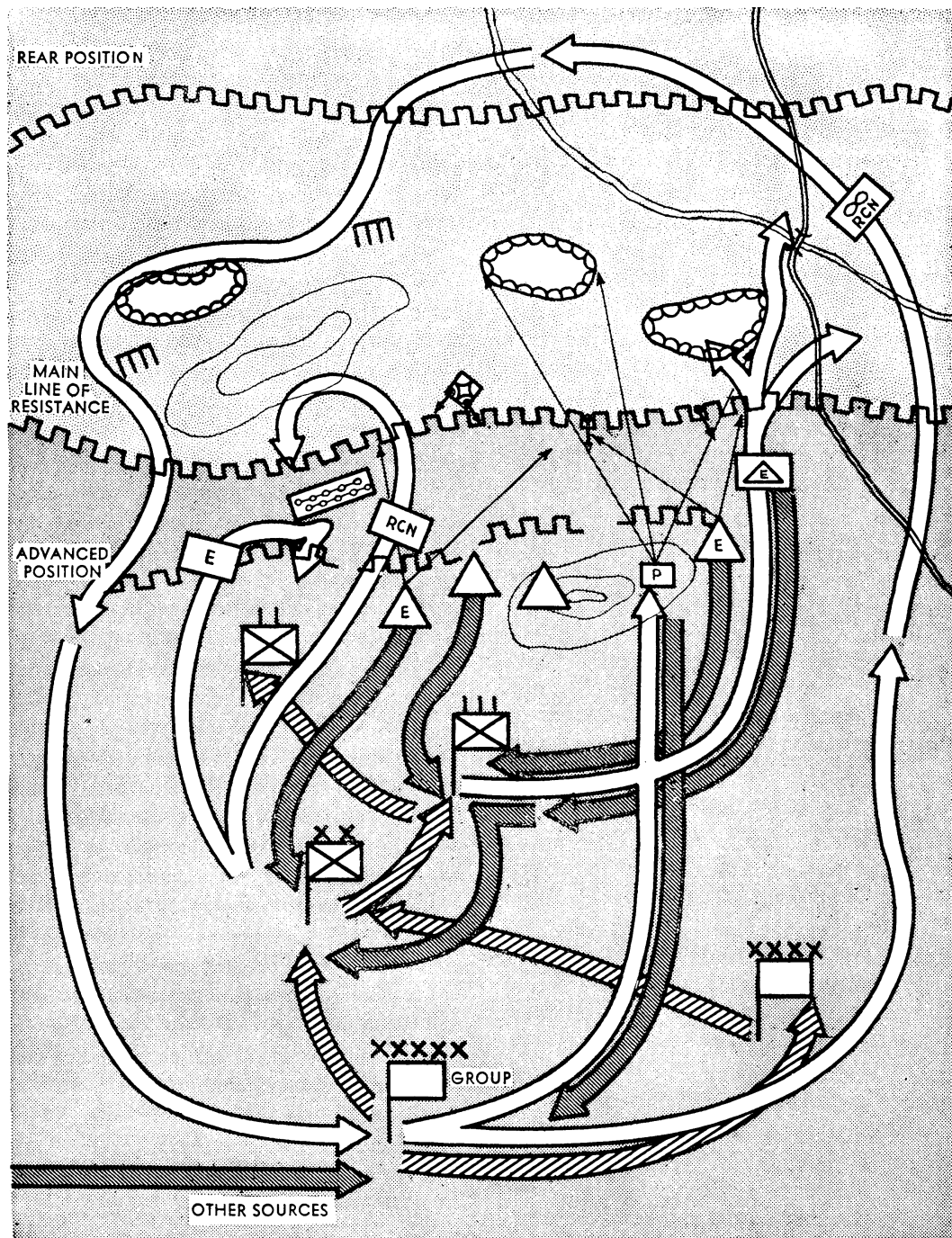
During the period of preparation for attack by another army group, engineer observation was conducted by regimental, divisional, and, partially, army reconnaissance units. In each divisional zone two to three engineer observation posts were set up in addition to command observation posts in the main operational sectors. The observation posts of other arms were used: about 40 percent were artillery observation posts, and 60 percent were combined-arms observation posts.

Mobile groups of combined arms, which conducted active day and night reconnaissance, were also allotted pioneers for mine and obstacle clearance.

In the advance, mobile engineer observation posts were formed from regimental and divisional pioneers (one to two posts per division), while army groups and army engineer reconnaissance platoons acted as mobile reconnaissance groups (one to two per divisional zone). Special groups were also organized for reconnaissance of specific centers of defense and for assisting tank and infantry units. Small engineer reconnaissance groups, which infiltrated through the front line of defense or were parachuted from airplanes, operated in the deep rear of the enemy.

In still another instance, the following elements were created for engineer reconnaissance during the period of preparation for the attack:

Two army group reconnaissance platoons, operating in the deep rear of the enemy.
Four army group reconnaissance groups, comprising part of the tank reconnaissance elements.








- | | | | |
|---|--|---|---|
| ← | ROUTE OF INFORMATION—COLLECTING AGENCIES |  | MOBILE ENGINEER OBSERVATION POST |
| → | IN FLOW OF INFORMATION |  | ENGINEER RECONNAISSANCE DETACHMENT |
| → | DISSEMINATION OF INTELLIGENCE |  | COMBINED RECONNAISSANCE DETACHMENT
(ENGINEERS FORM PART OF DETACHMENT) |
|  | GROUND PHOTO POST | | |
|  | ENGINEER OBSERVATION POST | | |

Figure 49. Plan of engineer reconnaissance and dissemination of information between staffs.

Six army group reconnaissance platoons, operating in army zones of advance.

One engineer group operating within the army group reconnaissance organization of combined arms.

Three reserve platoons of the engineer staff.

Six army reconnaissance platoons, operating in army and divisional zones.

In addition, one or two squads in each divisional pioneer battalion were designated for engineer reconnaissance.

On the basis of collated and verified data from all sources, the Soviet engineer staff finally prepares an engineer situation map (showing the enemy defensive zone, the lines and centers of defense, and antitank and antipersonnel obstacles) and a detailed description of enemy installations, which aid in determining the areas most favorable for a breakthrough. In addition, situation maps are developed, showing water barriers, condition of line of communication, availability of water supply, and presence of local materials for construction of crossings and roads and for camouflage.

Simultaneously, the engineer staff must assemble complete data about its own engineer units to determine the quantity and condition of personnel and equipment, and to what extent reinforcements from the troops and higher engineer echelons will be needed.

b. Preparation for the attack. In preparation for the launching of an offensive operation, specific responsibilities are assumed by combat engineers. Troop concentrations at the line of departure and other installations are camouflaged. Dummy troop concentrations, artillery, tanks, fortifications, and roads are constructed. Provisions are made for water supply. The engineers repair roads and bridges, or construct new ones; they fortify observation and command posts.

Engineer work for clearing lanes through obstacles and minefields is organized. Trenches are dug—at least two to a company—to approach enemy positions as closely as possible. Small bridges are laid across communication trenches to permit passage of infantry—one bridge for each platoon. Two bridges per battalion are laid for passage of motor transport and artillery.

All preparatory work is executed as silently and as secretly as possible so that the direction of attack will not be disclosed to enemy ground or air observation.

During this period, the engineer staff organizes and supervises instruction of the troops in various engineer measures. In one army, for example, tank-borne companies in each infantry regiment were organized to force a water barrier independently and to secure the opposite shore. In addition, other detachments were organized in each infantry and artillery regiment and in each division to repair roads along the route of march and to clear mines. All army troops were instructed in the use of local materials for crossing a river.

c. Assault tactics. ASSAULT ENGINEER-PIONEER BRIGADE. The organic pioneers and engineers of infantry and tank formations must be reinforced by GHQ assault units in operations against strongly fortified positions. Assault engineer-pioneer brigades are the basic Soviet assault units. Normally, they are employed under centralized control in the zone of the main effort. In a typical successful operation, an assault brigade operated in the zone of an infantry corps and was subordinated to the corps commander. Units of the brigade, as part of assault groups, secured divisional operations and took part in the assault.

Assault engineer-pioneer brigades should never, the Soviets teach, be dispersed over a two- or three-army area with equal distribution of equipment along the entire front.

Brigades are employed in close coordination with the other arms; pioneers must at all times be supported by infantry, artillery, and tanks. Assault brigades and assault units should not be used as “armored infantry” operating to the front of the infantry or for pioneer-tank raids in breaking through strongly fortified positions.

In the break-through of strongly fortified positions, the brigade performs the following:

- Conducts engineer reconnaissance.
- Detaches mobile obstacle-clearing detachments.
- Includes assault engineer-pioneer elements in corps and army antitank reserves for cooperation with antitank destroyer artillery regiments.
- Repairs and constructs roads, bridges, and crossings and lays corduroy roads at the line of departure.
- Clears lanes in minefields and other obstacles and organizes the passage of advancing units through them.

Participates in assault groups (detachments) for the destruction of timber-and-earth and concrete firing positions, and steel pillboxes.

Accompanies tanks and artillery and, together with infantry elements, assists in the displacement of guns and mortars attached to assault groups to new firing positions, and in equipping these firing positions.

Covers flanks and salients of advancing formations and secures seized areas by mines and other obstacles.

Clears routes of march and inhabited points used by troops of mines and obstacles.

MINE AND OBSTACLE CLEARANCE. In the offensive, pioneers move forward in front of the infantry, or with it, to clear lanes through minefields for infantry, tanks, and artillery. Primary march routes are cleared of mines first; the most experienced pioneers are assigned this task.

In the Stalingrad offensive, 85 groups of carefully selected pioneers, composed of from 10 to 25 men each, were designated to clear mines on the basic roads. They began work early in the morning and in 3½ hours had made 64 lanes and had rendered harmless more than 5,000 mines.

Security detachments are sent out to complete mine removal in abandoned houses, trenches, shelters, and mud huts, command posts and troop concentration areas, road gullies, enemy fortifications, etc., as the offensive develops.

Thirty-six obstacle-clearing groups may be organized from an assault engineer-pioneer battalion to clear 36 lanes for 12 to 18 infantry companies or 4 to 6 infantry battalions. An assault battalion can clear 18 to 36 lanes for tank platoons—fully servicing a tank brigade or two tank regiments.

DESTRUCTION OF PERMANENT FORTIFICATIONS. When earth and timber or concrete pillboxes, "crabs" (German mobile steel pillboxes), and concrete emplacements are expected, special assault groups must be formed by the infantry and pioneers. Each group contains from a section to a company of pioneers; consequently, 9 to 18 assault groups can be formed from one assault engineer-pioneer battalion. The infantry battalion or company, supported by the assault group, is usually commanded by an infantry officer, but sometimes by an experienced commander of an assault engineer-pioneer company or battalion.

The assault group is usually organized into the following subgroups (for an alternate, slightly stronger organization, see the assault regiment, paragraph 1b, section II, part III):

Demolition subgroups, composed of one to two infantry sections, one to two assault pioneer sections, and two to four flame-thrower operators.

Blocking subgroups, each composed of 1 to 1½ infantry platoons with one to two heavy machine guns, a section of antitank rifles, a platoon of 50-mm mortars, two to four men with flame throwers, and up to a section of pioneers.

Reinforcing subgroups (fire subgroups), consisting of one to two antitank guns (45- or 57-mm), two to six flame throwers, and one to two heavy tanks. In addition, one to two 82-mm mortars and one to two 76-mm guns are often included. In the case of especially heavily fortified installations, a 122-mm howitzer is added.

The assault group must be covered by at least as many direct-support infantry guns and machine guns as there are enemy direct-support infantry guns and machine-gun embrasures.

The organization and preparation of assault groups proceed under the centralized direction of the staff of infantry units, with cooperation by commanders of engineer elements for both tactical and technical supervision of engineer maneuvers. Coordination of infantry, tanks, artillery, and assault engineers must be organized between elements within the assault group; between groups within an assault detachment; and also between the assault group, infantry elements, security group, and group of artillery support. At least two practice assaults are conducted to perfect coordination. Three to 4 hours, after receipt of the mission orders, must be allowed for daylight reconnaissance.

The assault of pillboxes, "crabs," and casemates, proceeds in the following order: The assault group moves out under cover of artillery fire (which continues throughout the assault), and of smoke screens. Fire cover for the attacked position is neutralized first. "Crabs" are assaulted next by groups of reduced strength. Antitank rifles conduct fire on the side and rear walls, while pioneers use hollow charges to blow up the roof.

The method of storming a timber-and-earth or a concrete pillbox is as follows: The reconnaissance and obstacle-clearing subgroup verifies the information obtained by engineer reconnaissance and especially notes any new firing installations that may have appeared on the flanks. The blocking and fire subgroups cover approaches to the firing position from the enemy side. Simultaneously, part of the reconnaissance and obstacle-clearing subgroup clears the way for passage of the demolition subgroup. Camouflaged pioneers with antitank rifles, using all available cover, move up to positions for firing on the pillbox embrasures and approaches; the assault group must first concentrate its full force on neutralization of the embrasures. Flame throwers blind and tanks destroy the embrasures. If tanks and flame throwers are not available, embrasures are blocked with bags of earth and sawdust. Then the demolition pioneers throw Molotov cocktails, incendiary bombs, or smoke hand grenades in any openings; or sear the interior of the pillbox with a flame thrower. Finally, they blow up the pillbox with explosive charges. After its seizure, the pillbox must be secured with the help of infantry regimental security groups (or battalion security groups).

d. Hasty defense in offensive operations.

Red Army combat experience has demonstrated that captured enemy positions must be organized and prepared immediately against violent and repeated counterattacks, especially on flanks and salients. Hastily laid minefields are the primary methods of engineer support against such counterattacks, although mobile pillboxes and prepared obstacles are important supplements.

PLANNING THE DEFENSES. Sectors scheduled for fortification are chosen with a view to utilizing natural barriers which inherently, or with minimum adaptation, serve as effective obstacles to enemy advance. Inhabited points, forests, copses, and heights are especially favored. All enemy fortifications, after being cleared of mines, are used. Camouflage concealing the system of fortifications is erected if time permits.

Mine laying is planned in detail by commanders of pioneer battalions or of regiments who are designated as chiefs of mine operations on a division or corps front. The plans are based on thorough reconnaissance and designate methods to be used, quantities of materials needed, and timing of demolition with troop movements. They are presented

for the Commander's approval through the Chief Engineer. Chiefs of mining operations maintain communication with the Chief Engineer, by means of daily reports, and also with the over-all commanders of combat sectors with whom mine laying is constantly coordinated. This uninterrupted contact enables engineer units, with a minimum loss of time, to meet combat developments such as the necessity for securing a newly seized enemy position, combating a sudden enemy counterattack, or eliminating an unforeseen obstacle.

Coordination of pioneer maneuvers with antitank artillery in the laying of minefields is of special importance. Mines serve not only to destroy enemy tanks by their own action, but also to canalize tanks in minefields adequately covered by direct Soviet artillery fire. To acquaint artillerymen with possible areas of tank approaches within range of direct artillery fire, and with areas in which cover for pioneers laying minefields must be provided, engineer and artillery officers make a preliminary reconnaissance for strategic locations for minefields and firing positions. Artillerymen must be kept constantly informed of the limits of minefields and belts, and of any changes in them.

LAYING THE DEFENSES. The Red Army often attaches a pioneer platoon to an infantry company, or a pioneer company to an infantry battalion, for laying protective mine belts. An engineer unit assigned to an infantry company is held responsible for a sector not more than $\frac{1}{2}$ to 3 miles wide. A unit assigned to a battalion may cover a sector up to 5 to 6 miles in width. The depth in both cases is 3 to 4 miles. In one instance, the first belt was completed within 3 hours after assignment of the task, the second within 4 hours, and the third within 6 hours.

Mine and demolition equipment are brought forward on large sleds hauled by tanks and on hand sleds. The engineer troops are organized into small, mobile mine-laying units armed with automatic weapons and rifles. Such units are equipped with ten sleds, each loaded with six fragmentation mines improvised from captured 155-mm artillery shells; two prepared electrical circuits from the engineer demolition chest; 90 antitank mines; fifty 200-gram blasting caps, with fuzes; two mine detectors; six probes; five grapnels; and two machine guns. Controlled, electrically detonated mines in circuits are placed across main avenues of approach so that the offensive can be continued without wait-

ing for the removal of minefields. Contact mines are used in large numbers, however, in order to install adequate defenses within the limited time available (fig. 50).

The time element is so important that mine laying is continued even under enemy artillery fire.

3. DELIBERATE DEFENSE AND WITHDRAWAL

Chief engineers of regiments and divisions are responsible for technical assistance to their commanders in organizing deliberate defenses. They participate in working out the plan of defense and all orders concerning the fortifying of defensive po-

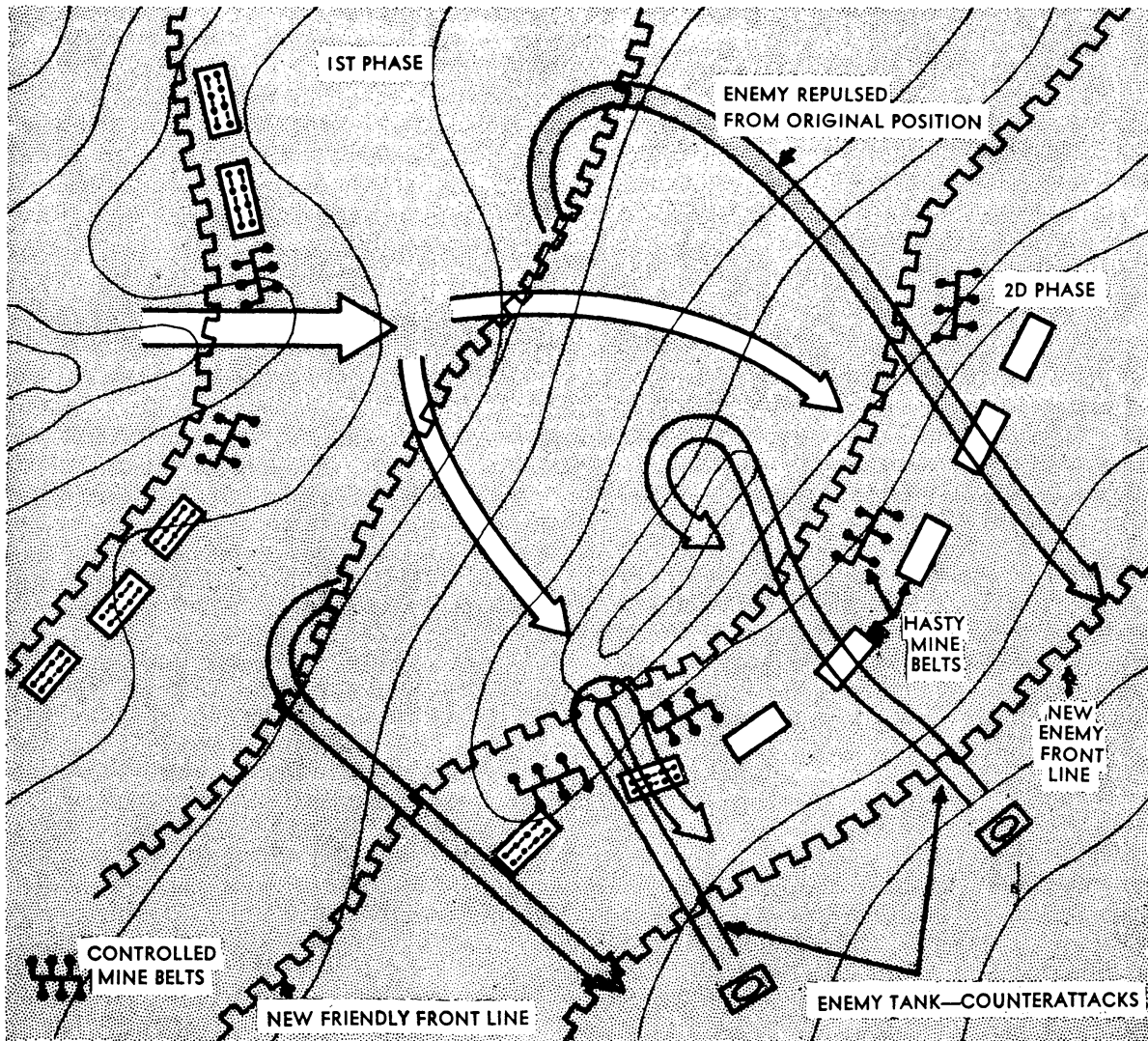


Figure 50. Hasty mine belts in an offensive operation.

Even though the enemy may observe some of the mine-laying activity, the prime Soviet consideration is to complete the system of defensive belts to the greatest possible degree. The necessity for rapid action may become so pressing that full completion of mine laying according to the planned pattern is left to the second echelon of pioneer units.

sitions. By authorization of the regimental (divisional) commander, they give orders to (company) battalion commanders concerning the priority of engineer work. Priority is determined by a careful evaluation of the nature of combat, character of the terrain, quantity of water supply, pressure of time, and availability of equipment and personnel.

The troops themselves, within the limitations of their organic equipment, fortify positions in their own particular sectors, under the direction of their commanders. Pioneers act as technical supervisors and instructors, themselves carrying out only the most complicated and difficult work. Under engineer leadership, communication trenches are dug; minefields are laid; machine-gun nests are dug in; mortar emplacements, command and observation posts, and troop shelters are constructed; obstacles are erected; and strongpoints are fortified.

For technical supervision of the fortifying of positions, the battalion commander has three to four pioneers at his disposal and up to a squad of regimental pioneer instructors. For more complicated work (mining, preparation of timber-and-earth firing positions, etc.), he will have in addition divisional pioneers—one to two platoons per regiment.

In the withdrawal, engineers are responsible for the destruction of all equipment, supplies, and munitions which cannot be transported with the troops.

4. CAMOUFLAGE

Engineer camouflage troops (army, army group, and GHQ) supervise the execution of strategic camouflage plans issued by the commander of combined arms. The practices of individual concealment, simple camouflage construction, and camouflage discipline are the responsibilities of the individual soldier. The engineer camouflage units advise, supervise, and instruct the troops in camouflage work and discipline, inspect camouflage work, assist in supply and preparation of camouflage materials, and themselves construct complicated, large-scale camouflage expedients.

American and Soviet camouflage doctrines are basically similar in purpose, fundamental principles, and methods employed. Camouflage by complete concealment, imitation, or disguise is used, depending on tactical desirability and physical practicability. Specific methods are influenced by the distance of enemy forces, the nature of enemy reconnaissance, available time and manpower, accessible materials for camouflage, season of the year, character of the terrain, and meteorological conditions. Emphasis in both American and Soviet doctrine is laid on utilization of natural and artificial materials, pattern painting, and dummy construction.

Soviet camouflage doctrine, because of a lesser reliance on friendly air power for protection, places heavy stress on camouflage discipline in eliminating

tell-tale indications associated with location of bivouac areas, firing positions, command and observation posts, tanks, supply points, etc.

Bivouac areas are revealed by the regular, sharply defined borders of unit sectors and outlines of tents, by smoke from camp fires and kitchens, and by worn paths to and from water supply areas, kitchens, etc. Rigid Soviet camouflage discipline provides for the disposition of troops in small groups so as to disguise the strength of infantry forces, and for the pitching of tents in uneven rows using trees and bushes as natural camouflage. Campfires can be lit only with special permission. Smoke from kitchen fires must be controlled and dispersed and, if possible, kitchens are located in nearby inhabited areas and used only at night. Buildings are constructed along already existing roads; movement within bivouac areas takes place along paths discovered and marked by engineer patrols.

Similar camouflage discipline hinders enemy discovery of observation and command posts, artillery positions, and tanks. Activity in command and observation posts commences only after camouflage measures have been taken. They are approached and left only on designated roads. Exposed routes do not end at an artillery position but are extended to another logical termination. Tank tracks are camouflaged by brushing them out or by covering them with local materials. In all cases, camouflage materials must be prepared, under engineer supervision, at a distance from the position or installation to be camouflaged so that tell-tale indications of activity, such as trampled paths and uprooted vegetation, will not disclose their true location.

Section VI. TACTICAL ANTI-AIRCRAFT ARTILLERY

1. MISSIONS

The primary mission of Red Army tactical antiaircraft artillery is to protect troop concentrations, forward and rear area installations, and forward lines of communications from hostile aircraft attacks. Antiaircraft artillery also conducts direct fire against land fortifications, attacks hostile infantry in assembly and deployment areas, assists in repelling attacks of enemy ground forces, and executes other firing missions which are normally assigned to light field artillery. Strategic antiaircraft artillery—with heavy, fixed, semimobile, and mobile guns, radar, searchlights, and barrage balloons—operates in close cooperation with interceptor aviation as an

entirely separate arm beyond the scope of this discussion.

2. TYPES OF UNITS

Tactical anti-aircraft artillery units consist of independent anti-aircraft artillery divisions, and organic anti-aircraft units of mobile formations. The anti-aircraft division is the basic GHQ reserve anti-aircraft artillery organization which is allotted to the various armies and army groups as required. An anti-aircraft artillery division consists of an anti-air-

craft gun regiment and three anti-aircraft automatic weapons regiments totaling sixteen 85-mm guns, forty-eight 37-mm guns, and sixty-four 12.7-mm anti-aircraft machine guns. It can effectively protect an area 10,000 yards wide and 7,000 yards deep—that is, a deployment area for the main effort of a major infantry-artillery offensive (fig. 51). This tactical employment of anti-aircraft artillery gives a powerful concentration of medium anti-aircraft artillery in addition to a barrage of automatic weapons which is equivalent to that of U. S. practice.

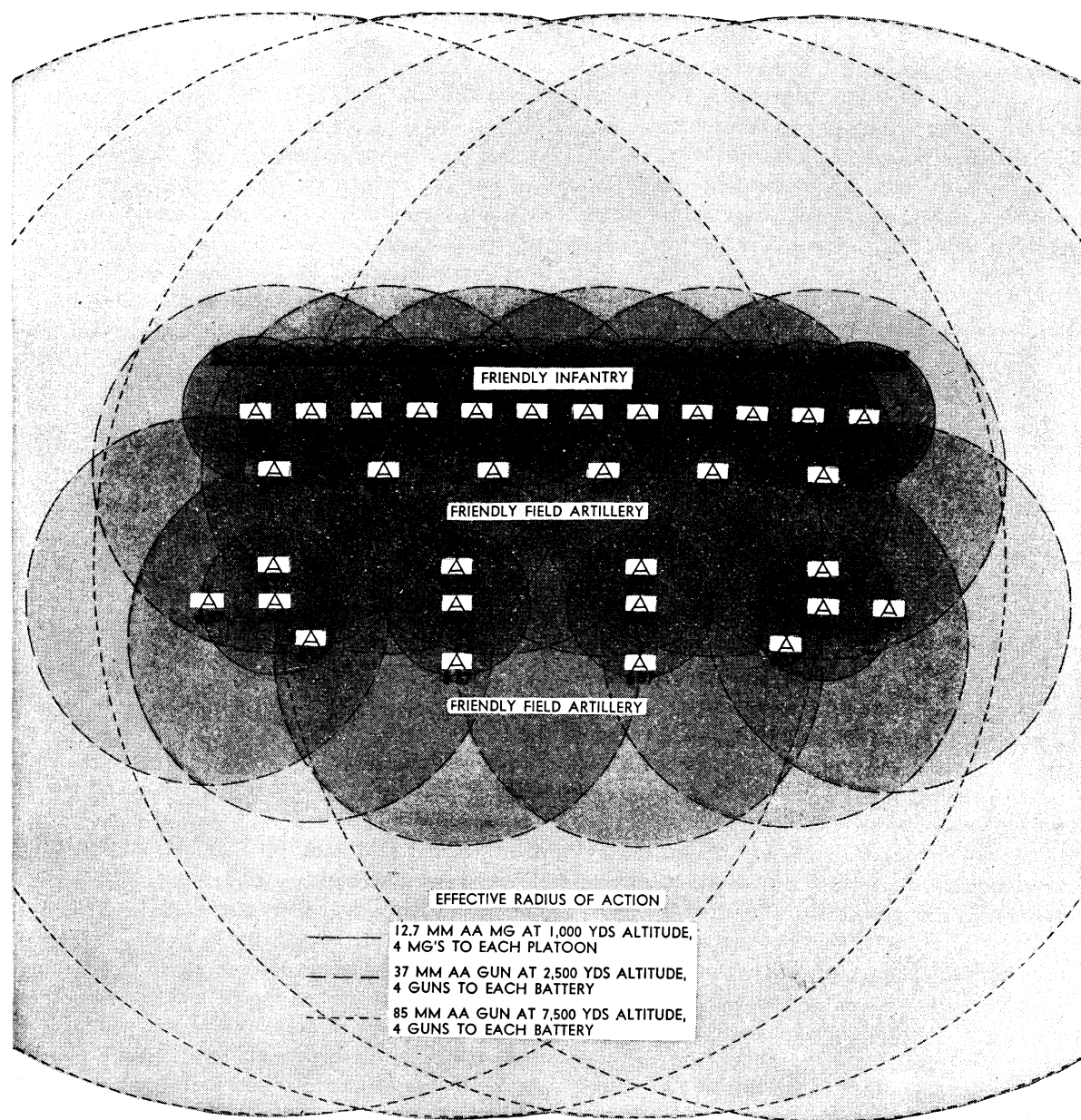


Figure 51. Anti-aircraft artillery division in defense of an infantry offensive.

The organic antiaircraft artillery of the armored, mechanized, and cavalry corps consists of an antiaircraft artillery regiment plus the antiaircraft machine-gun companies of the component formations, comprising in all sixteen 37-mm guns, and fifty-two 12.7-mm antiaircraft machine guns. By U. S. standards, this allotment of organic antiaircraft artillery to the mobile corps is incapable of providing adequate antiaircraft protection over the entire corps deployment area in most situations. However, centralized control of the antiaircraft weapons makes up for some of their deficiency in numbers, and permits defense of vital installations. Combat troops employ their own 7.62-mm machine guns and 14.5-mm semiautomatic antitank rifles for local protection.

3. CONTROL

The commander of the antiaircraft artillery units of a Soviet combined-arms formation is subordinate to the artillery commander of the formation. The artillery commander is the only person who may change the missions of the antiaircraft artillery; only he may shift its effort from a primary to a secondary mission, and the reverse. The commander of the antiaircraft artillery must keep himself informed of the general situation and of the mission of the supported units. He maintains communications with the staff of the supported organization and with the artillery commander of that organization. Jointly with the signal officer he establishes antiaircraft warning service.

In support of ground operations, the commander of the antiaircraft artillery groups his batteries to give maximum support to units which are in a most advantageous position to develop the offensive. In a static situation he groups his batteries to achieve concentration of fire over important installations and assembly areas. The antiaircraft artillery commander must not allow his tactics to become stereotyped and passive; guided by reconnaissance reports and study of the tactics and habits of the enemy, he must maneuver his batteries, use ruses, and, in cooperation with interceptor aviation lead the enemy into firetraps.

4. DISPOSITION

Tactical antiaircraft artillery is used for the protection of deployment and assembly areas, forward and rear area installations such as supply dumps and artillery and mortar positions, and for the support of ground operations. In protecting troops deployed

in forward areas, antiaircraft artillery is deployed linearly. The heavy machine guns are emplaced by platoons between 300 and 500 yards from the forward elements. Light antiaircraft guns are emplaced by batteries on a line 1,000 to 1,500 yards from the forward lines. The distance between batteries is between 1,000 and 2,000 yards, the distance between platoons is between 100 and 150 yards, and the distance between individual pieces is at least 30 yards. The medium antiaircraft guns are emplaced by batteries on a line approximately 2,000 to 3,000 yards from the forward lines. The distance between batteries is also between 2,000 and 3,000 yards, and the distance between individual pieces is at least 30 yards.

In protecting assembly areas and rear echelon installations, antiaircraft artillery is deployed in two concentric circles. The inner circle is located within the defended area; the outer circle is approximately 1,000 yards from the perimeter of the defended area. Distances between the batteries, platoons, and individual pieces are the same as those employed in linear defense.

Normally, medium antiaircraft batteries are emplaced approximately 2,000 yards apart in dug-in positions, and are camouflaged. Alternate and dummy positions are always prepared for the whole battery; if fire against land targets is anticipated, special dual-purpose emplacements are also prepared. The depth of emplacements is such that gun sights are protected from mortar fragments. The preparation of all types of emplacements and maneuver of batteries from one position to another are habitually accomplished at night.

Five types of fire control are used by Red Army medium antiaircraft artillery: tracking individual targets, moving barrage, stationary barrage, direct fire against land targets, and observed indirect fire against land targets. In tracking individual targets, a battery fires as a unit from data computed by a range finder and director, or by radar. In erecting moving and stationary barrages, a battalion or a larger groupment is a firing unit. These barrages are considered inefficient and wasteful of ammunition, and are used only when tracking is impossible due to meteorological conditions or other causes. In direct fire against land targets, fire is controlled by individual gun commanders against designated targets. When massed fire is desired, a battery may be used as a unit. Direct and indirect observed fire are used against land targets as parts of artillery preparations. Antiaircraft artillery guns are as-

signed targets whose destruction requires high velocity projectiles. Observed indirect fire is controlled in the same manner as that of light field artillery.

Light antiaircraft artillery is normally emplaced by platoons in dug-in and camouflaged positions. Emplacements are deep enough to protect gun sights from mortar fragments. Alternate positions for duty pieces and positions for fire against land targets are prepared with embrasures covering the sectors of responsibility for antitank defense. Light antiaircraft artillery employs direct fire only. The platoon is the firing unit. Effective range against approaching targets is 2,000 yards; against departing targets, 1,000 yards. In attacking ground targets, light antiaircraft guns are effective against embrasures of fortifications, personnel, observation posts, machine gun and antitank positions, and tanks.

5. SUPPORT OF GROUND OPERATIONS

In supporting ground operations, antiaircraft artillery has three functions: protection of march columns against air and land attacks; protection of personnel and matériel in assembly and deployment areas; and active support of the assault.

During the approach march, antiaircraft batteries are disposed throughout the column. Some light antiaircraft guns are emplaced in advance at points along the route where traffic may become channelized (narrow defiles, bridges, fords, or woods). Antiaircraft machine guns are dispersed along the column to protect the heavier antiaircraft weapons against attacks by low-flying planes and

enemy ground forces. At night 50 percent of the machine guns must be ready to fire against ground targets.

Active support of ground operations is carried out in three phases. During the artillery preparation for the assault, antiaircraft artillery—in addition to its primary mission—is used in planned fire against enemy fortifications, firing positions, and observation posts. During the assault, light antiaircraft artillery guns and machine guns accompany the assault teams to protect them against air attacks and to assist supporting arms. As a rule antiaircraft weapons are concentrated in sectors where the assault is most successful, in order to assist in repulsing probable counterattacks and to maintain the momentum of the assault.

6. IMPROVISED ANTI-AIRCRAFT DEFENSES

In addition to the antiaircraft weapons proper, the Red Army effectively uses light field artillery and semiautomatic antitank rifles against air targets. Field artillery batteries (76.2-mm guns and 122-mm howitzers) fire in volleys at predetermined ranges with pre-cut fuses. Gun emplacements are constructed so that trails can be lowered to increase the maximum elevation by 30 degrees. To facilitate control and to speed fire, orientation points are selected in directions of probable approach of enemy planes.

Three to five semiautomatic antitank rifles, firing on the same target, are used against low-level and dive-bombing attacks. They are considered effective at ranges up to 500 yards.

PART III. SPECIAL OPERATIONS

Section I. OPERATIONS IN LIMITED VISIBILITY

1. NIGHT OPERATIONS

The Red Army has been successful in both large- and small-scale operations at night. The Soviets consider that night operations are preferable when terrain, dense minefields, and other obstacles—combined with enemy preparedness—eliminate the possibility of surprise and make heavy casualties in daytime operations a probability.

Night raids, small-scale attacks, and reconnaissance in force are initiated to complete reconnais-

sance data, to force the enemy to disclose his plan of defense and plan of fire, to capture prisoners, to harass the enemy, and to divert his attention from other sectors of the front. During preparation for a major offensive, small-scale night operations are conducted in order to capture terrain favorable for observation of the enemy or suitable for deployment of the main force. All night operations are carefully planned and coordinated. For example, a typical small raid (figs. 52 and 53) was planned 6 days in advance and was preceded by careful observation of the enemy by members of the raiding party.

Order of advance of the reconnaissance party.	Cross the Vistula in a boat disembarking near a separate clump of bushes. Cross the trench and deploy in the rear of the heavy machine gun.
Objective.	Heavy machine gun in open firing position about 400 yards to the east of height 124.8.
Organization of the attack.	Reconnaissance party to consist of four men; Number 1 to guard the boat. Nos. 2 and 3, to attack the machine gun crew. No. 4 to throw a grenade into the shelter.
Fire support: Artillery.	Two batteries to lay interdiction barrage at A and B. One battery to fire interdiction mission in depth along the communication trench. 45-mm guns to fire in pairs on the enemy firing positions to the north and south of the objective.
Mortars.	To lay interdiction barrage at C.
Machine guns and anti-tank rifles.	To engage the same targets as 45-mm guns.
Coordination signals.	To call for artillery and mortar fire—one green rocket fired upstream. To call for a reserve boat—red light from a flashlight.
Order of withdrawal.	No. 4 to convoy the prisoner to the boat. Nos. 2 and 3 to cover No. 4, then Nos. 1 and 4 to cover Nos. 2 and 3.

Figure 52. Plan of a night raid across the Vistula, 16 November 1944

The success of night operations depends on careful reconnaissance, simplicity of maneuver, speed of execution, and surprise. The deployment area is occupied secretly during twilight hours so that the commanders of the assault teams may familiarize themselves with orientation points, phase lines, and avenues of approach. To achieve surprise, artillery preparation is often omitted during the initial assault. Two phase lines are selected. The first is located within the forward defense zone of the enemy. This position is used to regroup the assault teams and to establish coordination with the supporting artillery for the attack of the next objective. The second phase line is so selected that its capture would force the enemy to displace his artillery. To facilitate control of combat and designation of targets for the supporting artillery, the assault zone is divided into sectors. Orientation points for infantry and tanks are carefully designated. The assault is launched by a signal from

the line of departure. Advance of the assault teams is marked by visual and auditory signals. In order to reduce the effectiveness of enemy mortar fire, infantry advances at a jog. Battalion commanders must continue the assault until the second phase line is reached. If the attack fails, it is often repeated in the same sector on the assumption that the enemy does not expect such a tactic. This is in contrast to U. S. doctrine.

The battalion attacks in a single wave preceded by a small advance guard. The rifle companies are deployed in line, each company in turn being deployed in a line of platoons. Individual riflemen wear white arm bands. Squads advance in wedge formation: riflemen to the right of the point fire ahead and to the right; those to the left of the point fire ahead and to the left. If the assault sector is narrow (400 to 500 yards), a rifle battalion may attack in two echelons. The second echelon then consists of a reinforced rifle company whose mission is to protect the flanks of the battalion. For raiding missions, a special detachment is formed to evacuate captured documents, equipment, and prisoners. The assault-team principle is followed in grouping elements of the rifle battalion; that is, riflemen are supplemented by company and battalion weapons and by engineers according to the mission of each assault team.

Tanks are frequently employed in support of infantry at night. Preliminary terrain reconnaissance, clear statement of tasks, clear definition of orientation points, and close cooperation with infantry are considered the salient points in successful use of tanks at night. Each tank is assigned its route, mission, and the infantry assault team which it supports. Several riflemen are assigned to each tank to aid its crew in locating antitank weapons and obstacles. When the situation permits, tank headlights are used to illuminate enemy firing points, to light the way for obstacle-clearing parties, and to blind the enemy. In street fighting at night, tanks often set fire to buildings in order to illuminate the enemy.

In a night tank-infantry attack on Kuestrin, Germany, the following action was reported: Retreating Germans prepared an ambush for the pursuing Red Army infantry and tanks in a town park. The lead Soviet tank stopped and fired a few rounds into the town hall, setting it on fire (fig. 54), while the remaining tanks and infantry deployed in a rough semicircle. German soldiers in ambush were

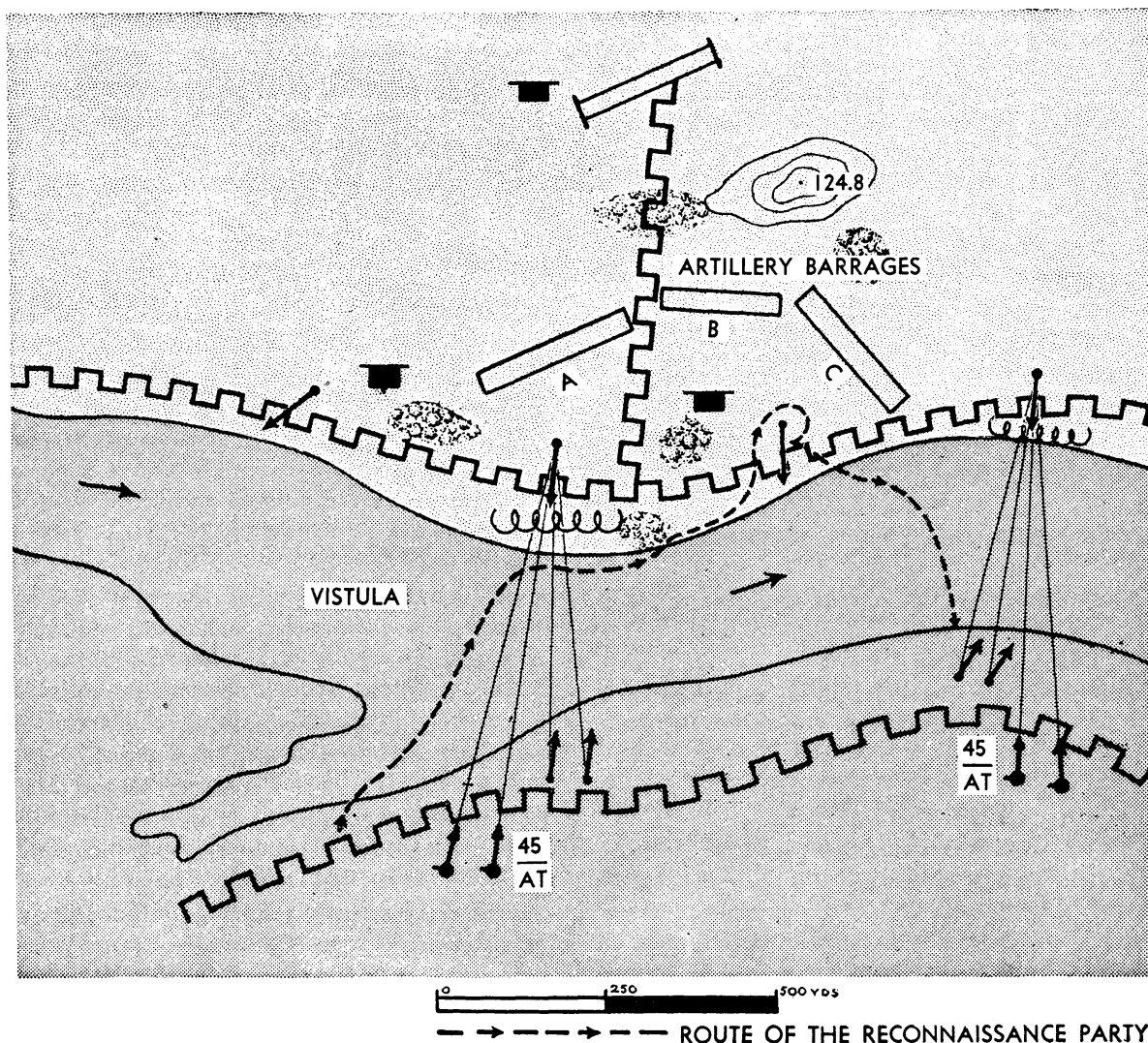


Figure 53. Sketch showing plan of a night raid across the Vistula, 16 November 1944.

silhouetted against the burning building and Soviet Tommy-guns who remained in the shadows made short work of the ambush.

Forcing of the Oder River line is an example of a large-scale night operation: 5,000 planes, 4,000 tanks, and over 22,000 pieces of artillery supported the infantry attack. A special feature of this operation was the use of massed searchlights. Over 200 searchlights were spaced about 200 yards apart to illuminate the path for Soviet tanks and blind the enemy. Surprise was achieved by launching the main attack along the entire front at night instead of at daybreak when it was expected.

2. USE OF SMOKE

Soviet tactical doctrine stresses the employment of smoke to cover friendly troops as much as to blind

enemy observation (fig. 55). Smoke is used to cover regroupment of forces, concentrations of troops, direction of the main effort, and all phases of large- and small-scale operations where the terrain affords little cover from enemy observation. It is also used to deceive the enemy by false smoke concentrations which cause him to waste ammunition and disclose his firing positions.

The Red Army uses smoke concentrations over large areas for extended periods to cover major attacks; to protect vital installations such as railroad bridges, assembly areas, and supply dumps from enemy aviation; to screen a counterattack; or to cover a withdrawal. The width of such a smoke screen varies from 2,500 to 3,500 yards. Roads leading to important locations and all orientation

points in the proximity of targets are also covered with smoke to make their detection more difficult.

Smoke, when used to cover a major attack, is coordinated with the principal phases of the assault. In the preparatory phase, smoke is used to cover

the activities of the reconnaissance parties and obstacle-clearing detachments (fig. 56). During the assault phase, smoke is laid over the forward lines of the enemy (fig. 57). Care is taken not to blind friendly observation posts. In this phase, false con-

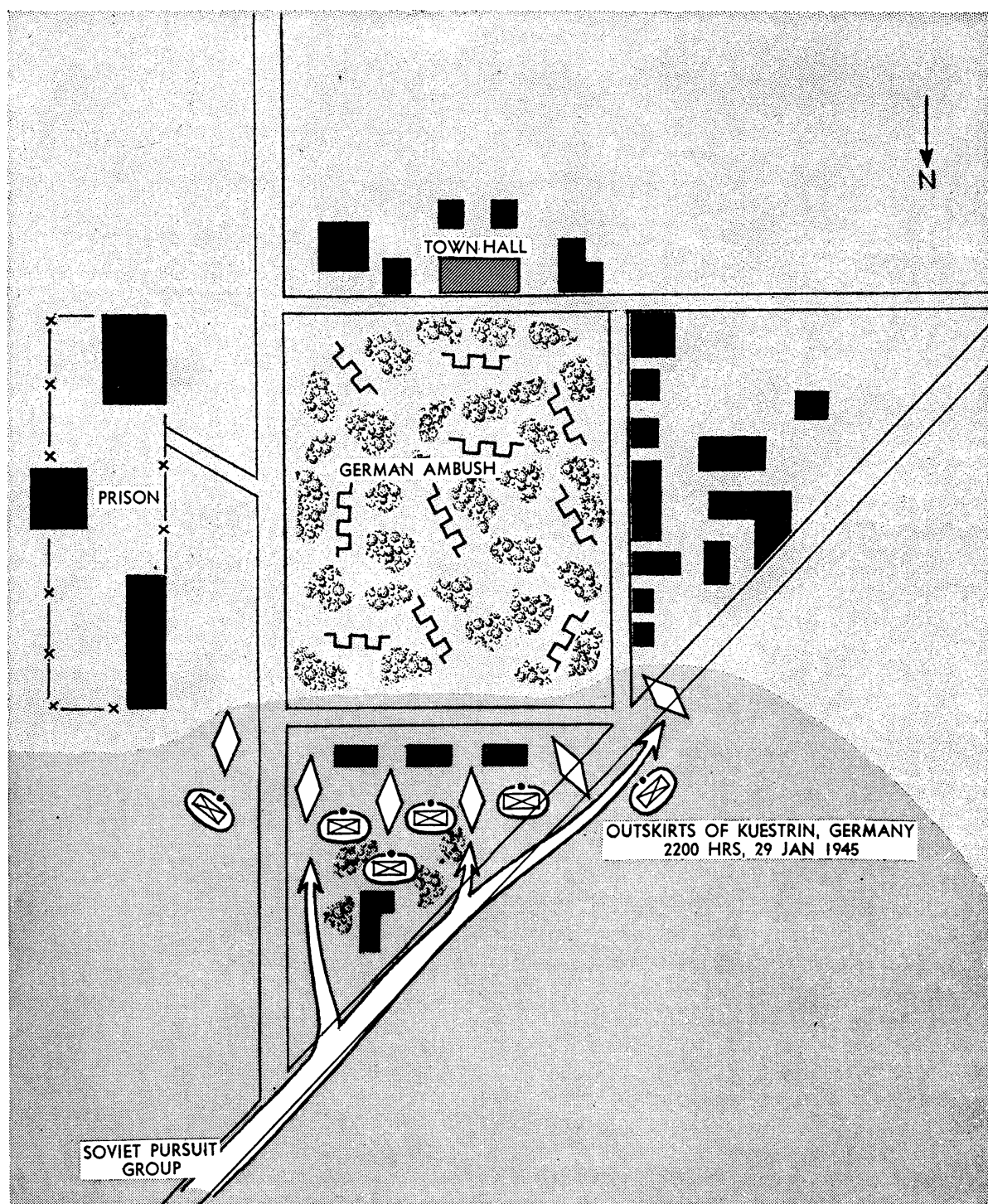


Figure 54. Armored attack on a town at night.

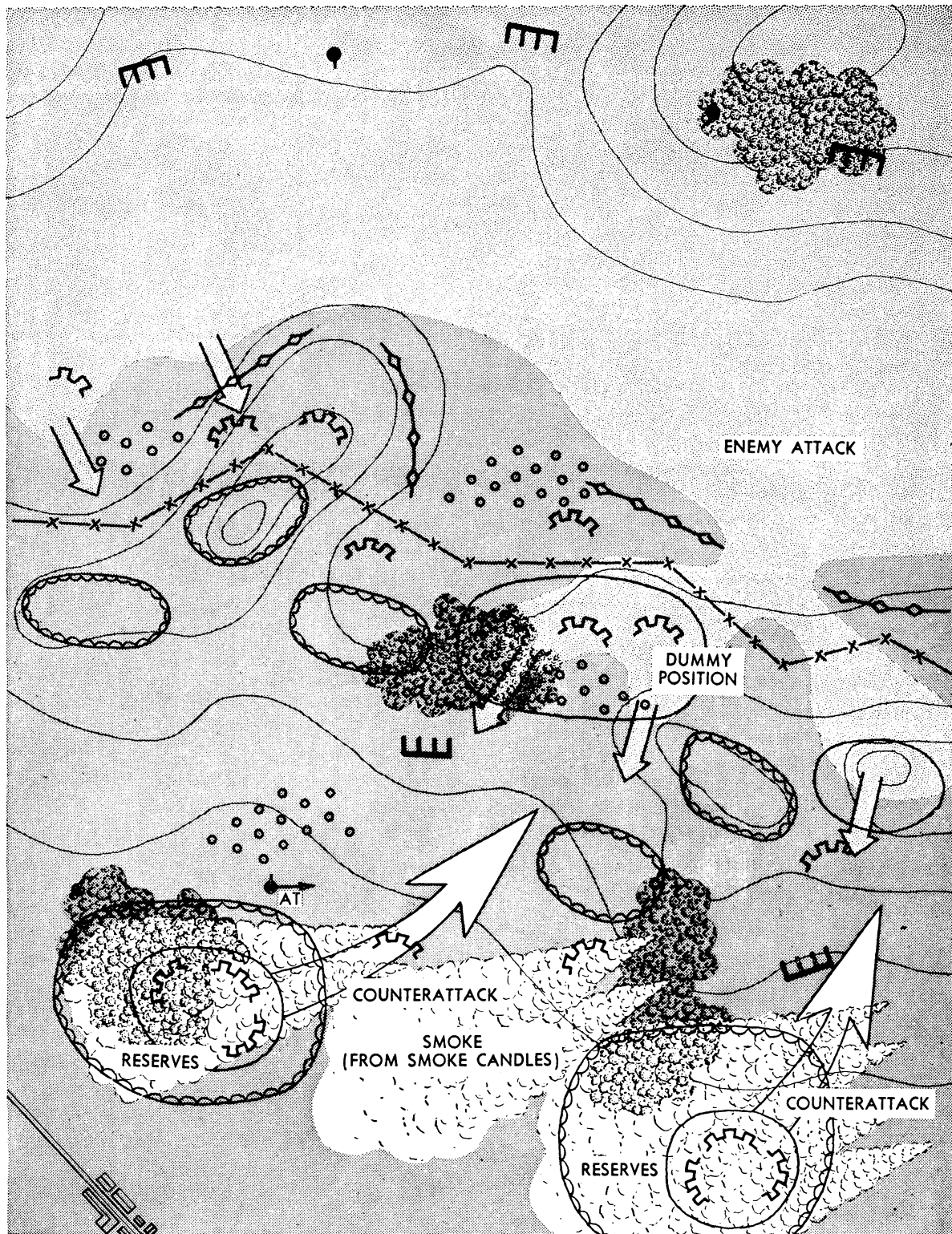


Figure 55. Smoke used to hide a counterattack. Note that smoke covers friendly rather than enemy troops.

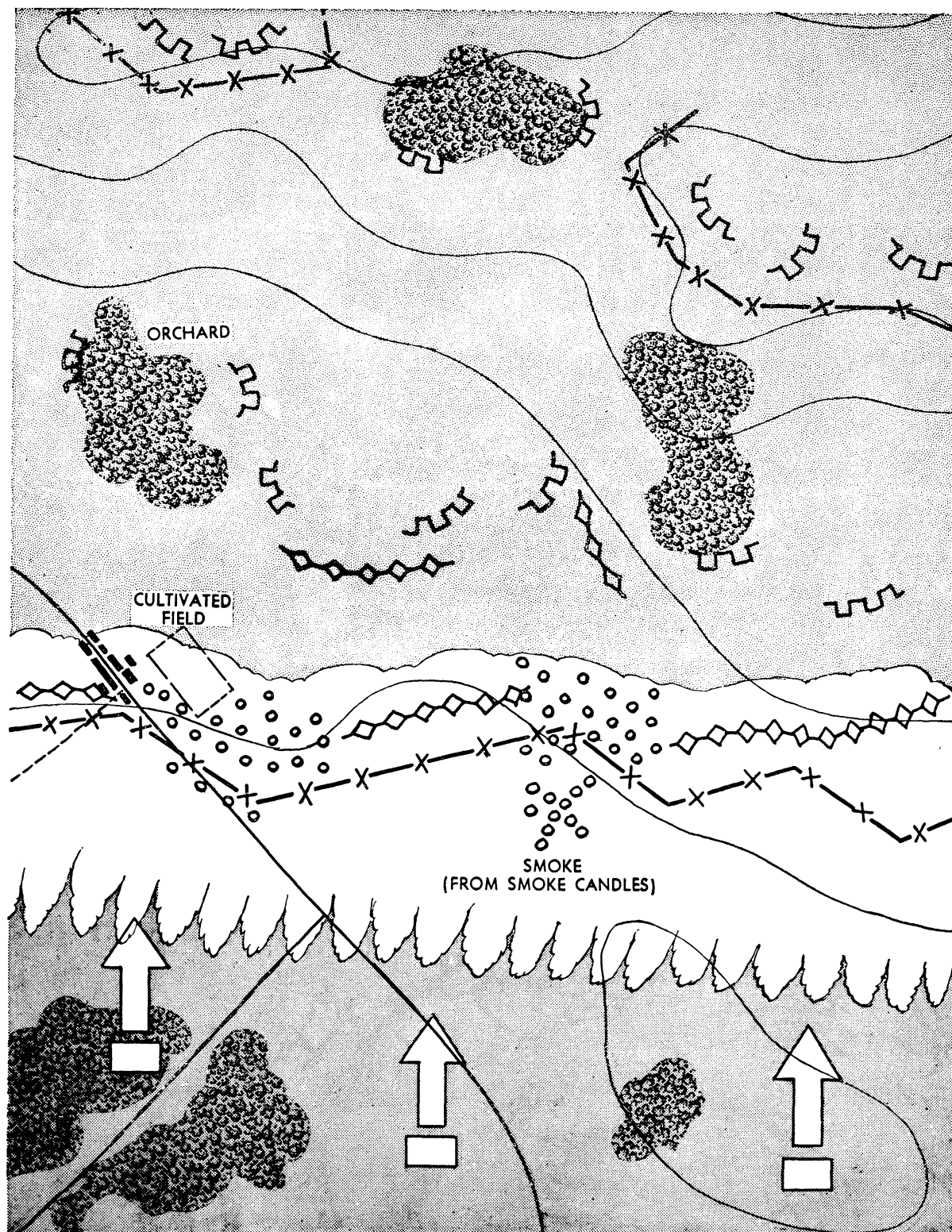


Figure 56. Use of smoke to cover removal of obstacles.

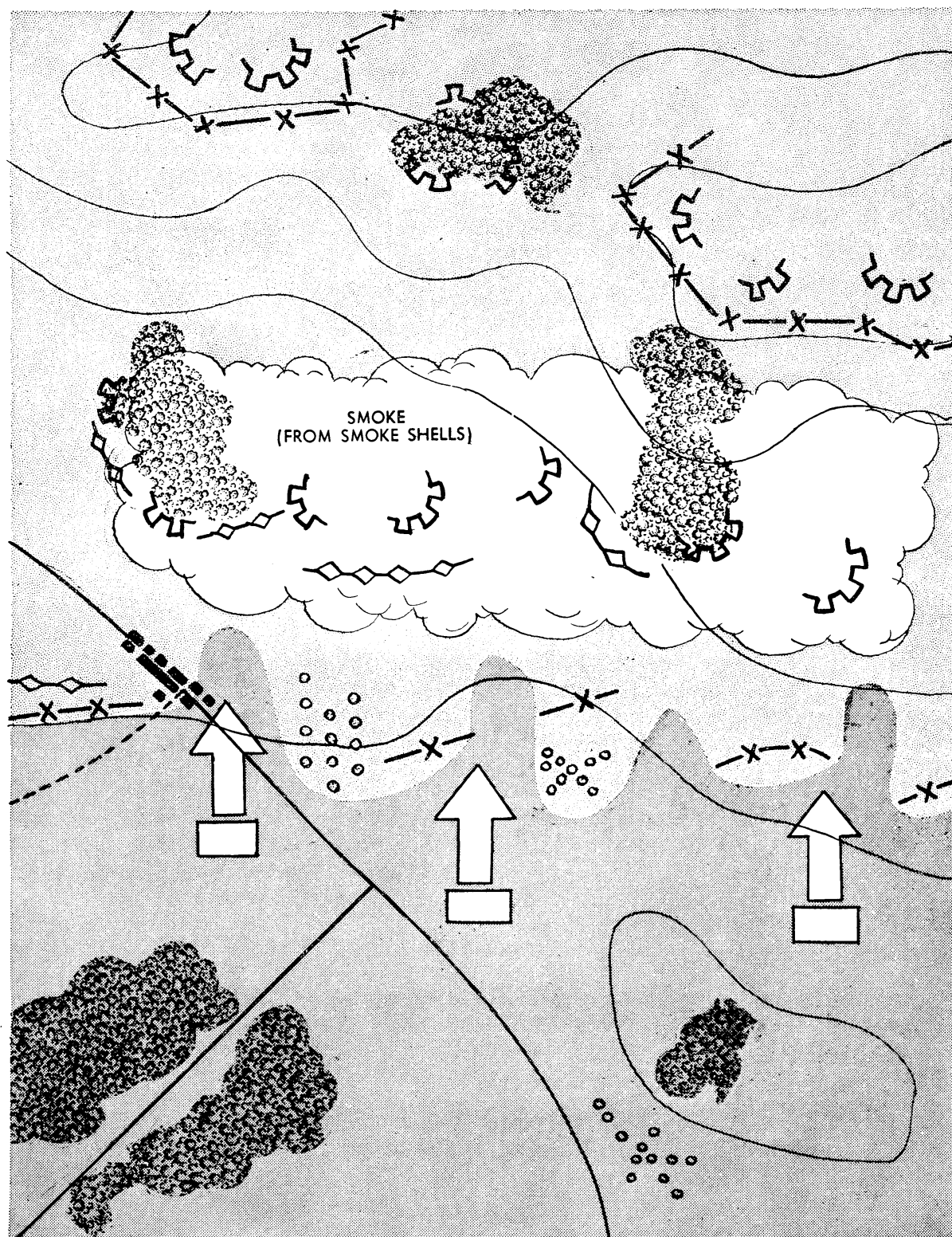


Figure 57. Smoke used to cover the initial objective of the assault.

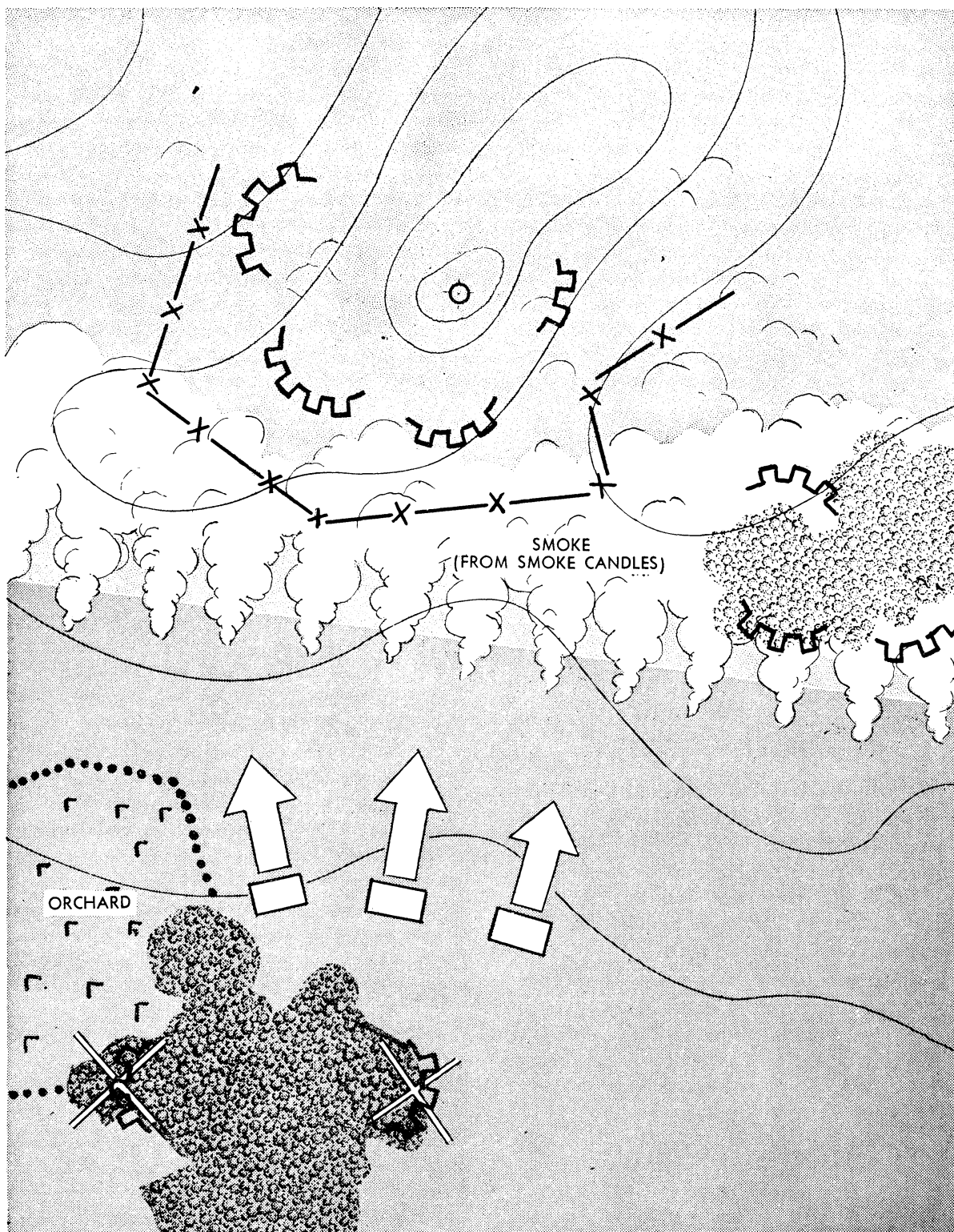


Figure 58. Smoke used within the defensive positions of the enemy.

centrations of smoke are used to confuse the enemy as to the direction of the main effort. A smoke screen may be laid between the first and subsequent assault waves. During combat within the defense lines of the enemy, smoke is used to cover portions of the enemy positions, to blind by-passed centers of resistance, or to blind stubbornly defended areas (fig. 58).

Small-scale employment of smoke is an established practice in the Red Army. Smoke pots or smoke hand grenades are used to cover the actions of an individual soldier or a small unit, or to blind individual enemy observation posts or firing positions. Smoke is a valuable cover for individual riflemen or a small infantry unit during the advance toward enemy lines. Tank units use smoke not only to cover their advance from the assembly area to the deployment area and maneuvers within the enemy defense zone, but also for withdrawal from enemy fire. Smoke is also used to simulate tank losses, to screen the work of tank crews in repairing minor damage on the battlefield, and to facilitate the evacuation of damaged tanks under fire. Three to five smoke pots are used to screen the maneuvers of one tank.

Judicious use of smoke can nullify efforts of the enemy when he uses smoke shells for registration fire.

Section II. ASSAULT AND DEFENSE OF FORTIFIED ZONES

1. PLANNING AND ORGANIZING THE ASSAULT

The destruction of enemy forces in a fortified zone is accomplished by the complete break-through of all enemy defensive positions in the sector of the main effort, and subsequent flank attacks against adjacent sectors to clear the entire fortified zone. (See also sections II and V, part II.)

Fortified zones vary in defensive strength according to the extent of development, type of fortifications, terrain, strength of the defending personnel, and defensive fire power. The German fortified zones encountered by the Red Army were usually about 40 miles deep and extended up to 100 miles along the front. The outpost defense zone, 9 to 12 miles from the main defensive position, consisted of strong points at all dominating terrain features. The main defensive positions consisted of permanent steel and concrete emplacements organized as strong points, with numerous trenches and separate firing positions interlaced between

them. Switch positions, to prevent lateral movement if main defensive positions were breached, covered the 7- to 10-mile distance between the main defensive positions and the second defensive positions. The second defensive position was generally weaker than the main defensive position except that counterattacks were a constant threat to the assault groups, especially if strong units from the main defensive positions succeeded in falling back to the second line. This line was 2 to 3 miles deep; behind it was the rear defensive belt, generally of earth and timber construction, 1 to 2 miles in depth.

Soviet doctrine prescribes two possible types of assault, the accelerated attack and the progressive attack. The accelerated attack is used when enemy forces are disorganized and the fortified zone is not fully developed. Combat formations of combined arms and mobile troops reinforced by infantry, artillery, engineer units, and aviation are used to break through the fortified zone. The progressive attack is employed when considerable resistance from thoroughly developed fortifications is anticipated. Soviet doctrine stresses the intensive training of assault groups together with the supporting arms as the most important single factor in the successful assault of fortified zones. In many World War II operations, at least two rehearsals by assault groups and cooperating arms were held in rear areas prior to the actual assault.

The assault may be made with the main effort along a single front from 6 to 9 miles wide or in multiple thrusts each 2 miles in width. Holding attacks are made simultaneously for diversion and to seize isolated fortified positions. The basic mission is to destroy enemy forces within the defensive zone and in the rear. Great emphasis is made on attacks against the flanks of the penetration area. In mountains and swamps, assaults are generally made on a narrower front in successive stages.

2. COMBAT ORGANIZATIONS IN THE ASSAULT

Infantry assault groups must be of balanced composition to facilitate control under exacting conditions. The echeloning of troops must be organized to provide for the immediate replacement of losses in the leading assault groups, to increase the intensity of the attack into the enemy's defensive depth, and to develop the breach by attacking the enemy flanks. The organization of assault groups begins with the assault division; the basic combat element is the assault battalion. While some details of the

assault organization vary with the situation, the basic structure has been standardized since 1944.

a. Assault division. This consists of a Guards Rifle Division of 10,500 men, and strong tank, artillery, and engineer reinforcements which bring the total strength up to 16,000 men (fig. 59). The supporting armor normally consists of one regiment each of heavy and medium tanks, a regiment of 76.2-mm or 85-mm self-propelled artillery, and about a company of mine-clearing, flame-throwing, and bridging tanks. GHQ artillery includes a light artillery brigade, a mortar regiment, two to four battalions of 122-mm to 152-mm howitzers, a battalion of 203-mm howitzers, and a battery of superheavy artillery. The assault engineer-pioneer regiment includes flame-thrower operators and other special engineer troops.

The assault division forms three assault regiments. In addition, artillery groups and subgroups, the tank support group, the smoke-laying group, and the antitank reserve are constituted.

Four types of artillery operate under the control of the divisional artillery commander:

The divisional artillery support groupment (120-mm mortars, 122-mm howitzers, and 152-mm howitzers) is responsible for neutralization of at least the first two lines of trenches in the assault and for reinforcement of the regimental artillery groupment. Part of the artillery employs direct fire against enemy firing positions and obstacles.

The division is also allotted subgroupments from the corps countermortar (120-mm mortars and 122-mm howitzers) and destruction groupments (152-mm and 203-mm howitzers, superheavy artillery). The former subgroupment is assigned the mission of countermortar and counterrocket operation; the latter, the destruction of permanent fortifications.

Finally, the division maintains an artillery reserve, which is committed by the divisional commander as required.

The assault division is deployed in one or two echelons in accordance with the strength of enemy fortifications and the assigned missions. A general reserve and an antitank reserve must be provided. The divisional assault front in the main effort has a width of from 0.6 to 1.2 miles. In secondary efforts, and in mountain and swamp combat, the front is 2 to 2.5 miles wide.

b. Assault regiment. Each regiment of the

basic rifle division employed in the assault is reinforced by the following:

Artillery (one battalion of the organic divisional artillery, one battery of the organic divisional antitank battalion, a GHQ mortar battalion, and a GHQ light gun battalion).

Armored vehicles (two companies of medium tanks, one company of heavy tanks, one battery of light or medium self-propelled guns, and about a platoon of mine-clearing tanks).

About a battalion of combat engineers (fig. 60).

The assault regiment resulting from these reinforcements forms two assault battalions. The third rifle battalion is utilized for the infantry component of the regimental assault group, the regimental obstacle-clearing group, and the regimental reserve. The regimental assault group is used in operations against forts and concrete casemates of great strength. In addition to a rifle company, it comprises a pioneer platoon, a heavy tank company, mine-clearing tanks, a self-propelled gun battery, and platoons of mortars and flame throwers. It is often supported by a smoke-laying group. The regimental obstacle-clearing groups clear passages through minefields and obstacles, prior to and during the infantry and tank assault, support the battalion obstacle-clearing groups in difficult operations, and enlarge gaps for the passage of succeeding echelons. The regimental reserves provide antitank and antipersonnel security, especially for the flanks and rear of the regiment; they also serve as a personnel and matériel replacement pool for the assault battalion and the regimental assault group.

The tank support group consists of two medium tank companies, each of which normally supports one assault battalion.

The regimental artillery groupment consists of one organic battalion of divisional artillery (regimental combat team), plus a battalion of heavy mortars. This groupment is under the control of the divisional artillery commander during the artillery preparation phase, but passes under the control of the regimental commander during the assault phase. This artillery fires from open as well as covered positions, supports the assault as directed by the regimental commander, and may be utilized to replace losses in the battalion direct-fire artillery groupment.

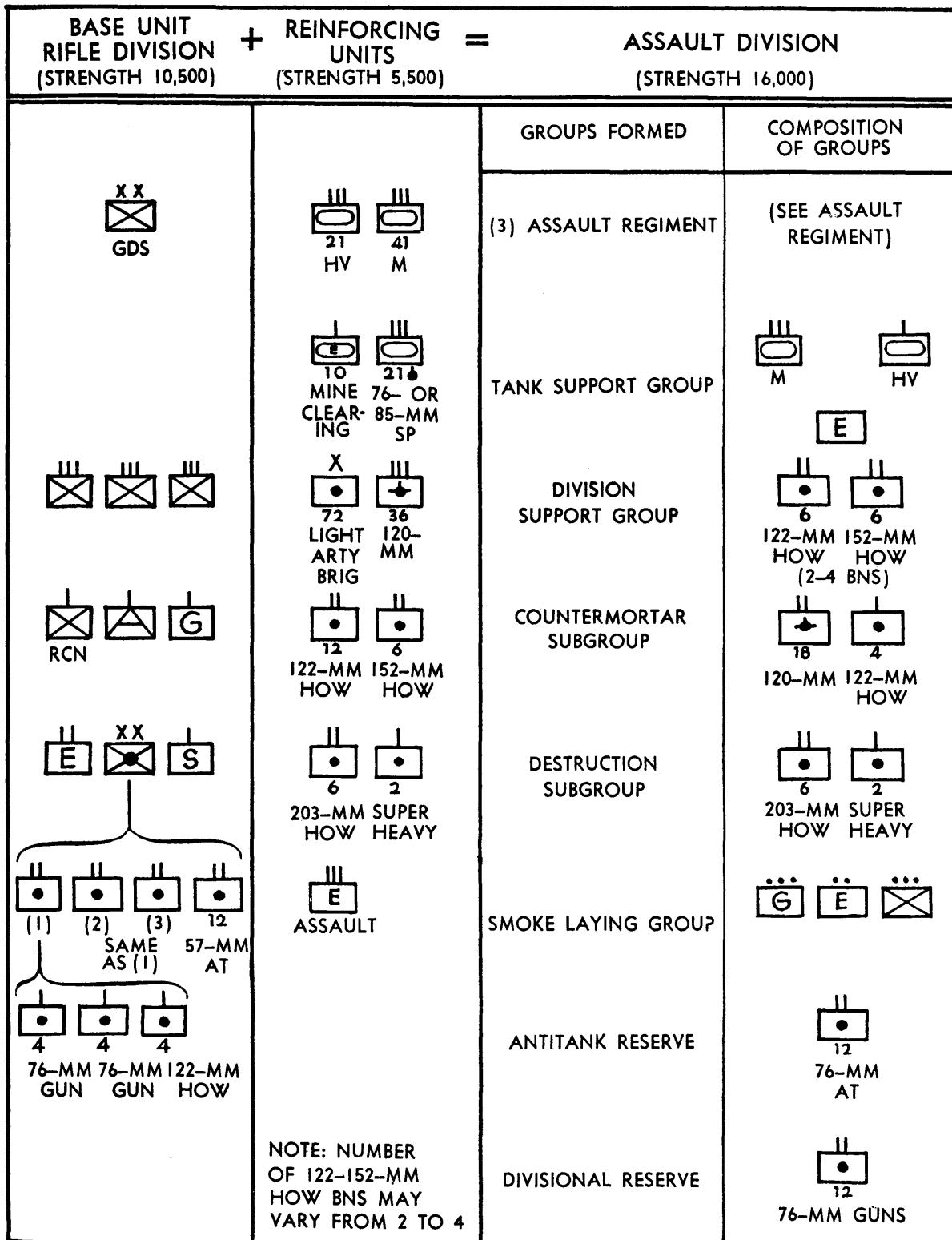


Figure 59. Organization of the assault division.

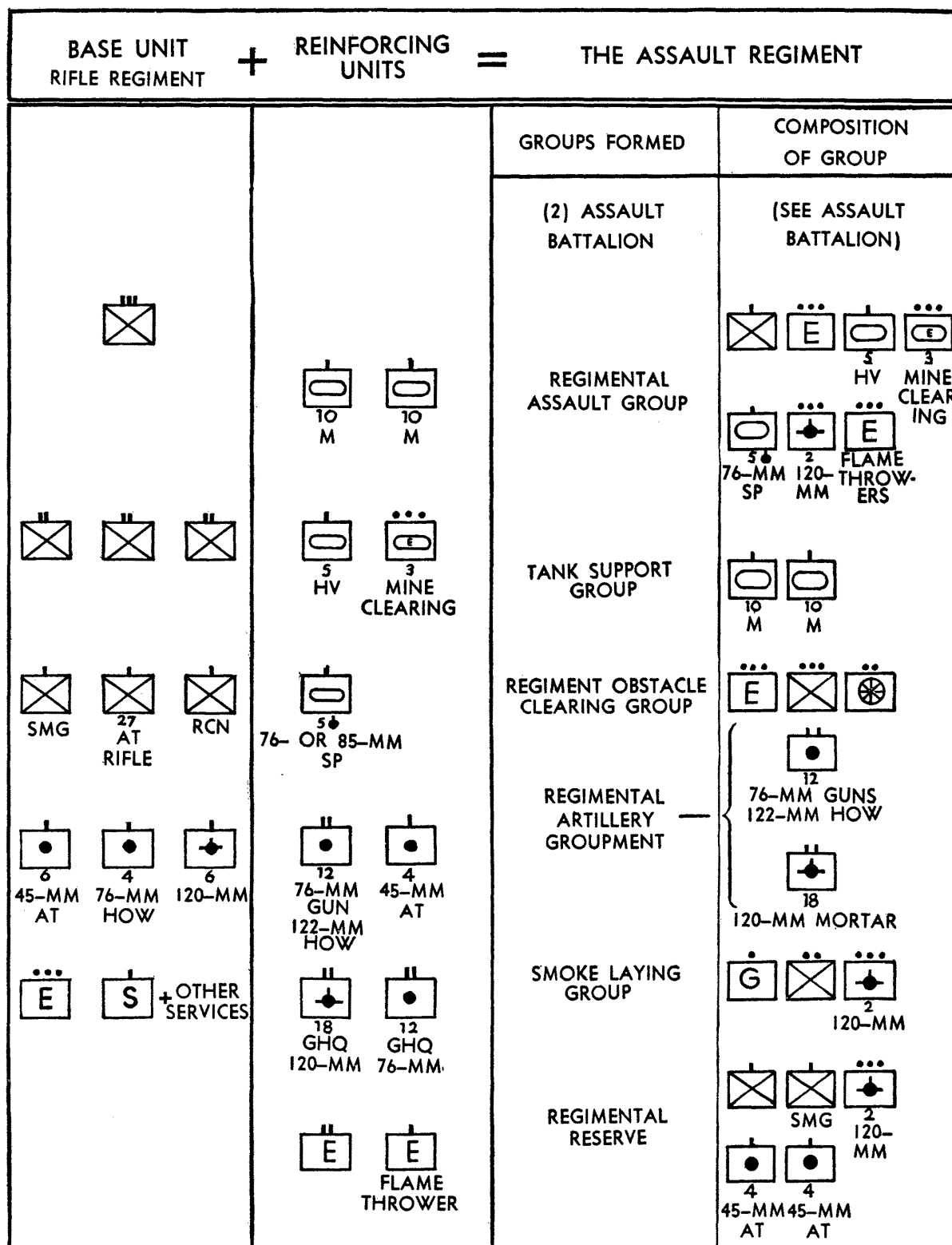


Figure 60. Organization of the assault regiment.

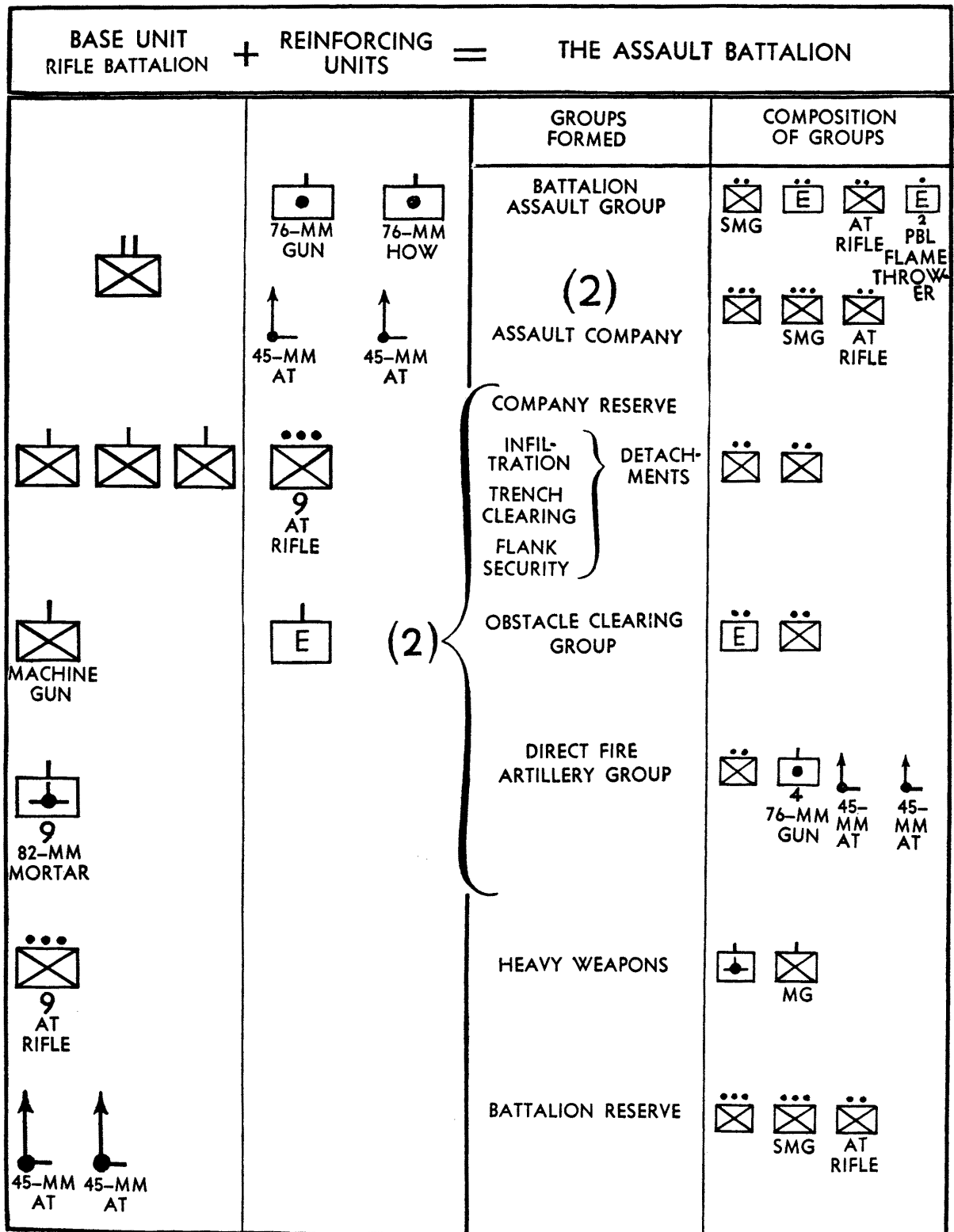


Figure 61. Organization of the assault battalion.

The assault regiment in the main effort deploys with assault battalions abreast or in column; its zone of action therefore varies from 550 to 1,100 yards.

c. Assault battalion. The assault battalion is the primary tactical unit employed in the assault of fortified positions. It consists of the rifle battalion reinforced by two batteries of 76.2-mm guns or infantry howitzers, two light antitank guns, a platoon of antitank riflemen, and a company of pioneers (fig. 61).

The assault battalion, like the assault regiment, forms but two assault companies, the third rifle company being allotted to the battalion assault group, the direct-fire artillery groups, and the battalion reserve. Each assault company deploys two platoons—one rifle and one submachine-gun platoon—abreast. Infiltration and trench-clearing teams, as well as personnel for flank security, are organized from the third platoon. Each company is reinforced by an obstacle-clearing group of one pioneer and one rifle section; and a direct-fire artillery group of 76.2-mm guns or a howitzer battery, two light antitank guns, and a rifle section for security (fig. 62). Direct-fire artillery does not participate in the artillery preparation.

For operations against pillboxes and concrete emplacements, an assault group is organized in the battalion. Its organization varies slightly in strength and capabilities in accordance with the resistance of the enemy position to be assaulted. Typically, it consists of a section of submachine gunners, a section of pioneers, a section of antitank riflemen, and two or three men with portable flame throwers.

The battalion mortars and heavy machine guns remain under centralized control. The battalion reserve consists of the balance of the third company (one rifle and one submachine-gun platoon) and an antitank rifle section.

The battalion deploys on a front of 550 yards and to a depth of 440 yards in one assault echelon. In mountain warfare and in swamps, the battalion deploys in two echelons.

3. PREPARATION OF THE ASSAULT

a. Organization of reconnaissance. The staff of the senior troop commander organizes the reconnaissance plan for the entire operation. Soviet practice prescribes mission-type and continuous reconnaissance by all reconnaissance units to make possible the proper command decision. A minimum

of three separate sets of aerial photographs is often prescribed to supplement ground reconnaissance. Extensive and uninterrupted ground observation during the preparation phase, as well as during combat, is one of the most important forms of reconnaissance. Day and night reconnaissance patrols determine specific enemy data. Complete information must be gained by means of combat reconnaissance. A combat reconnaissance group consists of a rifle battalion supported by two or three divisional artillery battalions and reinforced by GHQ artillery and tanks, mortar units, and aviation. During this operation, special artillery, tank, and engineer reconnaissance is conducted simultaneously with general troop reconnaissance. During combat reconnaissance, forward enemy firing positions and outposts may be assaulted and seized if the neutralization or capture of such positions will facilitate general assault.

All information of enemy installations and dispositions is recorded on large-scale maps and distributed down to battalion and company commanders several days prior to the assault.

b. Planning the assault. Assault group training is a fundamental requisite during the preparation phase. Thorough training in the proper employment of the individual weapon is followed by the training of assault groups in close coordination with all supporting arms. In many operations this type of training has taken place on a large scale in an area far to the rear, and has included practice assaults by the assault teams against reproduced enemy fortifications. Holding forces and reconnaissance units remained in contact with the enemy forward positions during this time.

The line of departure is far more elaborate in this type of operations than in the offensive where no heavily fortified zone is encountered. A forward trench position is constructed at a distance of 150 to 200 yards from the enemy outpost line, and is occupied by observers and security elements. Infantry units are deployed in several lines of trenches to the rear where elaborate shelters, dumps, and concealed gun positions are prepared. These trenches are 100 to 150 yards apart; they contain battalion and regimental reserves, dug-in direct-fire gun positions, mortar positions, command posts and medical stations, and ammunition and other supply dumps.

The topographic service produces maps (R. F. 1/2,000) in sufficient quantities for complete dis-

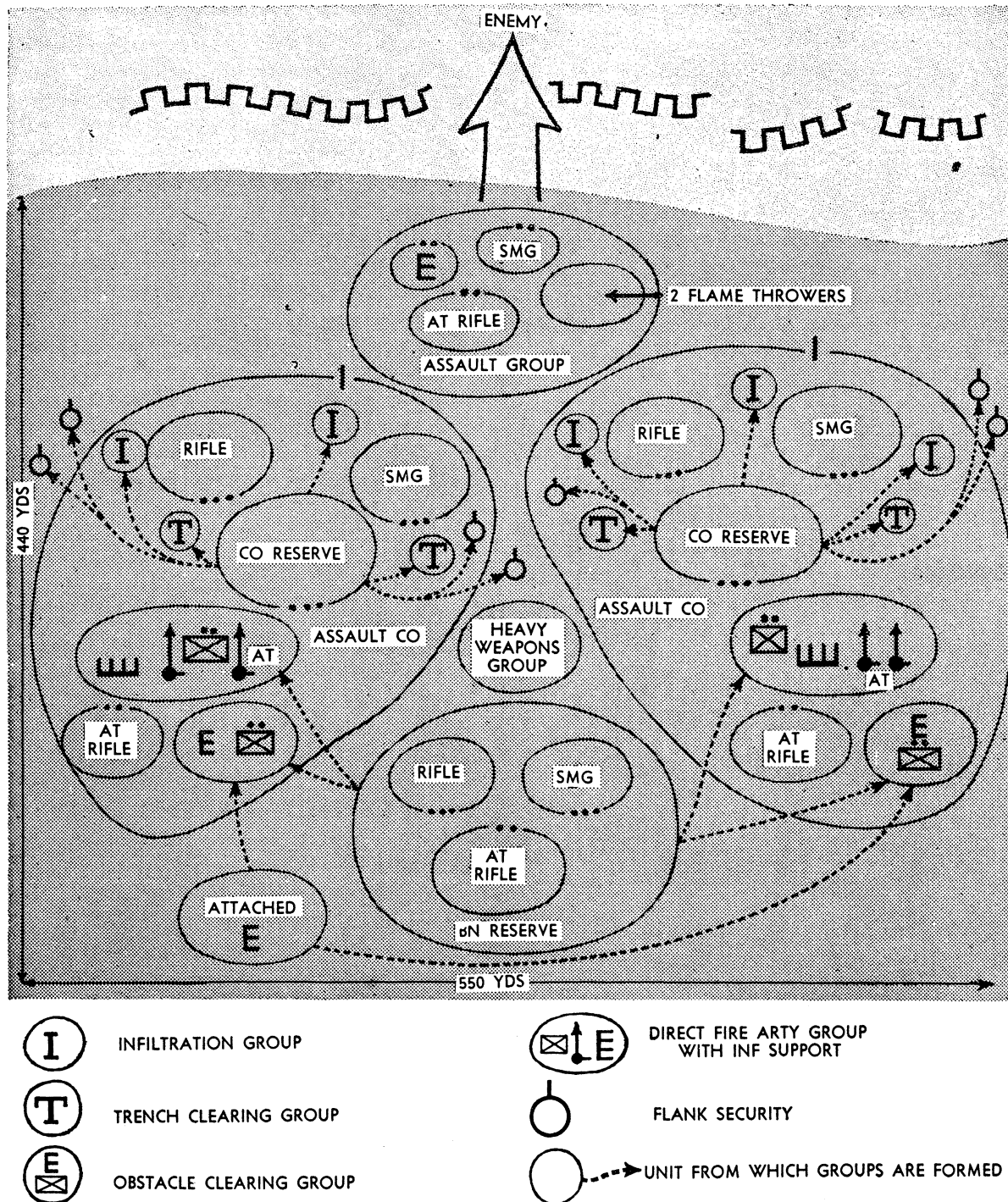


Figure 62. Combat formation of the assault battalion.

semination. The entire enemy fortified zone is indicated in the greatest possible detail. The combat coordination tables are worked out in complete detail with definite missions assigned to every assault group.

Troop concentration and redeployment prior to

the assault are carried out by night with great secrecy, using specially constructed communication trenches. Assault groups must occupy the line of departure trenches within one day of the assault. On the eve of the assault, ramps are dug and passages are cleared to facilitate movement forward of per-

sonnel, tanks, and guns from their entrenched positions.

4. CONDUCT OF THE ASSAULT

The artillery and aviation preparation has the mission of weakening enemy resistance to the greatest possible degree. Artillery and bombardment units attack all known enemy fortifications on a front wider than the main effort sector in order to neutralize enemy positions which can direct flanking fire on the penetration area. Stormovik formations attack enemy personnel in trenches, assembly areas, and rear areas as well as firing positions and targets of opportunity. Fighter groups provide cover against enemy air action throughout the entire operation. Artillery and close-support aviation continue to neutralize enemy positions throughout the entire assault phase by attacking successive enemy defensive lines and strongpoints impeding the progress of the assault groups. Particular attention is directed against concentrations of enemy infantry antitank guns and revived strongpoints, gun batteries, and mortars.

The obstacle clearing groups prepare lanes through minefields and wire entanglements on the eve of the assault and move forward during the artillery-aviation preparation phase to continue obstacle clearance.

Final assault group and tank preparations are completed during the artillery and air offensive, in accordance with the observed results of the preparation.

The assault begins at the moment tank units reach the line of departure. Artillery fire is transferred against enemy positions in depth and on the flanks of the assault sector. The assault must follow close behind the artillery barrage, to deny the enemy an opportunity to reorganize.

Infiltration units move forward prior to the assault in order to cover the assault units with submachine-gun fire directed against enemy infantry firing positions. Infantry and tank assault groups then pass through obstacles along prepared lanes, directing their fire on the first and second line of trenches. Upon reaching the first line of trenches, grenades are thrown and the group continues the offensive, keeping close to its supporting artillery and mortar barrage. Enemy personnel left behind in trenches are destroyed by the trench-clearance teams and units of the second echelon. The obstacle-clearing groups continue to remove mines and obstacles,

guide infantry and tanks through the gap, then follow them for further obstacle clearance. Automatic weapons and artillery fire at revived enemy firing positions to facilitate the forward advance of assault groups.

The offensive is intensified by feeding an increasing number of supporting troops into the penetration area to reinforce the break-through spearheads and to deliver strong flank attacks from the gap.

Those special fortification assault groups which have been assigned the specific mission of destroying known enemy fortifications are placed in the first echelon. Other special assault groups follow in the second echelon in readiness to assault new or revived casemates or strong points as directed by the battalion commander in that sector. The assault group commander determines the direction and mode of attack, taking into account the location of supporting enemy firing positions, their sectors of fire, the characteristics of the fortifications to be assaulted, and precautions against enemy counterattacks. The assault group sections operate as follows: Direct-fire artillery, machine-gun and tank sections fire on adjacent enemy firing positions and infantry protecting the fort or casemate. The obstacle-clearing section and the main body of the assault group advance through obstacles up to 100 yards of the casemate and cover the demolition section with submachine-gun fire and by grenades. The demolition section destroys the casemate in a single blast or piecemeal, depending on its size and strength. At the same time, charges are placed; grenade, flame-thrower and submachine gun attacks are directed against apertures. In some cases, embrasures are blocked by sand bags. (A detailed description is given in section V of part II.) After the assault is launched, artillery and machine-gun support is brought up behind the assault group to cover probable approaches of enemy counterattacking infantry.

Powerful forts are assaulted after the advancing echelons of infantry and tanks have isolated the fort from its supporting firing positions and enemy infantry. Smoke screens are often used to facilitate the assault on a powerful fort which has been bypassed and is isolated from enemy support.

After breaking through the main defensive position, the next positions are similarly assaulted but at a greater tempo. To facilitate the complete seizure of the fortified zone, every small breach in depth and on the flanks must be immediately ex-

exploited even though the breach may not be in the sector of the main effort.

Artillery and air bombardment in short concentrations support the deep penetration of the assault groups. Increasing numbers of supporting troops develop the penetration in depth and width. Every captured position is carefully secured against enemy counterattacks—by hasty minefields, firing positions, and wire obstacles placed by engineer groups of the second echelon. When enemy counterattacks are repulsed, the assault groups must follow on the heels of the withdrawing enemy for further exploitation.

5. DEFENSE OF FORTIFIED ZONES

The bases of organization of permanent fortified areas are battalion and regimental defensive positions. Special defensive battalions are often formed for this purpose, and equipped with a high proportion of automatic weapons, medium mortars, and antitank weapons. (For general discussion of defensive organization see chapter VI.)

a. Battalion defensive position. The infantry battalion can defend a forward position up to 1 mile in width. However, in strongly fortified zones the front width is narrowed to 500 yards or less, and the battalion is echeloned in depth in conformity with the lay-out of the strong point and prepared fortifications. The battalion must be prepared to organize the strong points for all-around defense, but defensive positions normally contain a “gorge” exposed to fire from rear positions. This prevents immediate utilization of the battalion position if captured by the enemy.

In occupying a prepared position, the battalion commander must analyze the defense plan which indicates the strength, equipment, and locations of individual fortifications, strong points, trenches, and concrete pillboxes to be manned by the battalion units, as well as the attached infantry support groups for each casemate. The system of fire, antitank defenses, camouflage requirements, engineer works, and minefields are also indicated. The first missions of the battalion commander are to supplement the existing system of fire with the battalion and attached weapons, and to continue the development of the position by the construction of supplementary communications trenches, personnel shelters, observation posts, and switch positions for personnel and weapons, especially mortars. All battalion, artillery, and attached mortars must be registered on avenues of approach, on outpost positions, and on

obstacles. Alternate mortar positions, observation posts, and command posts are prepared, wired for signal communication, and registered on critical areas within the battalion fortified sector in order to destroy enemy forces in firesacks should the enemy penetrate into the battalion sector.

Artillery and mortars are organized for counter-preparation fire. During enemy artillery preparation, destructive enemy fire against fortifications and firing positions may be immunized by laying protective smoke screens. This is done on orders of the regimental commander. When firing positions are neutralized or destroyed, the system of fire is reorganized by moving forward machine guns and other weapons to reserve positions. When the assault phase begins, all destroyed weapons in firing positions must be replaced by reserve weapons. Soviet casemates are always provided with a rear exit and ramp to facilitate rapid movement of artillery in and out of the position.

During the assault, enemy penetrations are isolated by machine-gun and mortar fire from rear and flank positions; counterattacking groups then destroy the isolated enemy. Tanks are engaged by antitank guns, casemates, and open emplacements. When tanks break through the forward defensive position, they are destroyed at the next defensive position while mortar fire and automatic weapons separate enemy infantry and tanks by antipersonnel fire. Revived pillboxes are supported by artillery, mortar, and machine-gun fire while fortification support groups and tanks counterattack the enemy to reestablish the position. Deep enemy penetrations are resisted by maintaining heavy fire against the enemy flanks and preventing the isolation of individual strongpoints. Artillery fires from open positions when necessary, and all weapons deliver the maximum fire to restrict enemy movement and to enable regimental reserves to organize an effective counterattack.

b. Regimental defensive position. Although the battalion organizes strong points for all-around defense, the regiment is responsible for intermediate defensive positions and switch positions which may be occupied upon orders from the division commander. The regimental defensive position is characterized by extensive development of firesacks and ambushes, well camouflaged infantry positions, and highly maneuverable artillery and mortar fire. The regimental reserve consists of at least one infantry battalion, reinforced by tanks and artillery. The

reserve is deployed to the rear of the battalion strong points with the missions of reinforcing the battalion positions by fire and counterattacking enemy assault forces which penetrate or by-pass the forward battalion positions. The regiment must be prepared for all-around defense if encircled. The regimental position has considerable defensive strength, due to minefields and intricate obstacles erected by the engineers. The regimental smoke-laying group is organized for screening the position from observed enemy artillery fire.

Counterpreparation fire by divisional and attached artillery has been a decisive factor in weakening large-scale enemy attacks on the fortified zone. Fortified zones are the key positions which deflect the attacking enemy into channelized sectors in which he may be isolated and destroyed. Massed artillery fire is concentrated on enemy forces which penetrate between strong points into a firesack. Then a powerful tank and infantry counterattack destroys the enemy salient. These tactics are characteristic of the centralized type of defense. A notable example of this was the destruction of German forces in their attempt to penetrate the fortified zone of the Kursk salient in 1943.

Section III. CITY WARFARE

1. OFFENSIVE OPERATIONS

Since the nature of city fighting gives an advantage to the defense, Soviet doctrine, like U. S. doctrine, favors isolating and by-passing cities rather than attacking them directly. Numerous large cities were encircled by the Red Army during the latter part of the war, thereby cutting off large enemy field forces defending them. The organized German defense of encircled cities continued when the battle lines of the front were 20 or more miles beyond them.

Soviet doctrine teaches that the rapid and economical assault of defended cities is achieved by thorough and continuous reconnaissance, and by isolation of centers of resistance which are reduced by infantry-artillery assault groups. The attack on a city may be compared to the assault of a fortified zone, but with certain advantages. The civilian population, particularly women and children, imposes a burden on the defending military forces with respect to food, water, health, and shelter, as well as providing a negative morale factor. The main disadvantages of defense derive from the inherent tactical weakness of city building. Streets constitute corridors which restrict movement and prevent the

organization of a continuous system of defense. Buildings are not uniform in strength and size, and many are highly inflammable. In addition, they afford little opportunity for mutual fire support at close ranges, impose a perimeter type of defense in each structure, and can be used as shelters for attacking forces. Further disadvantages to defending forces are the restricted fields of fire and visibility.

On the other hand, the offense also encounters disadvantages in city warfare not found in open terrain. The extreme compartmentation horizontally and vertically makes progress slow and costly. The rubble of destroyed buildings affords the defenders easily adaptable defensive positions with excellent camouflage. The ease of mining, booby-trapping, and flooding by the defenders; the presence of traps for armor and artillery; the danger of collapsing structures—all these factors favor the defense and must be overcome by specially trained assault groups. The presence of unsuspected passages, such as subways and sewers, and the ease of interior communication facilitate infiltration counterattacks and breakout offensives by the defending forces. Offensive operations also involve difficult problems of direction and control.

Two basic types of attack are employed: the systematic attack against continuous defensive lines in depth, and the accelerated attack against weak sectors such as large city parks or open spaces. Seizure of the latter divides the defending forces into smaller pockets.

a. Reconnaissance. Detailed intelligence must be prepared concerning the enemy fire plan, the main fortified city zones, firing positions and principal weapons, and approaches affording the best cover. The deadly effect of hidden fire in city warfare makes location of enemy firing positions especially important.

In Red Army practice, combat reconnaissance is the chief means of obtaining information about the enemy in cities. In the assault of large cities, reconnaissance detachments of every arm and of the combined arms may operate for 6 days prior to assault. Combat reconnaissance continues during the assault to determine all new firing positions, especially on the flanks of the penetration. Combat reconnaissance is supplemented by other methods of obtaining data. City plans are studied in detail, particularly with regard to the location of utility systems, subways, sewers, and the like. Observers are located at posts which permit overlapping vis-

ibility; each observer is assigned a sector covering not more than 15° to 20° of vision. Special patrols are organized to capture prisoners for interrogation. These patrols consist of a seizure group of seven men and two support groups of six men, each armed with grenades and submachine guns. When full information cannot be obtained by other forms of reconnaissance, reconnaissance in force is conducted both day and night to draw enemy fire.

b. Assault formations. The basic operating unit in city warfare is the rifle battalion, reinforced with armor and antitank guns. When enemy resistance is intense, one city block is designated as the objective for each battalion. The variations in enemy defenses necessitate considerable flexibility in supporting artillery and armor.

The battalion is deployed for assault in column formation composed of four distinct groups (fig. 63). The advance guard or the infiltration group consists of a rifle company of two or three platoons and an antitank section. It is armed with automatic weapons, grenades, antitank rifles, and antitank rocket launchers. The second echelon or main body is the assault group, and is similar in strength and composition to the regimental assault group organized for the assault of fortified zones (see section II, part III). It consists of a rifle company, about half of the battalion heavy weapons, and a detachment of demolition engineers and smoke layers from the rifle regiment. Supporting weapons are two to three battalion or regimental direct-fire guns and a platoon of self-propelled guns. The third group is the support group which includes the balance of the battalion heavy weapons, three to four regimental or divisional direct-fire guns, and one platoon or medium tanks or self-propelled guns. The last group is the battalion reserve of one rifle company, which provides flank-security patrols.

Subgroups of varying size and composition are detached for separate assault missions on isolated structures. A typical subgroup consists of seven submachine gunners, five engineers, three to four heavy machine-gun crews, and two antitank riflemen. Two to four regimental or divisional guns may be placed in support of each subgroup.

c. Conduct of the assault. The two basic arms on which the burden of city warfare chiefly falls are the infantry and the artillery. Engineers supplement infantry combat by extensive de-mining work and by executing demolitions. Tanks use their mobile fire power to supplement artillery. Prior

to every assault, coordination plans are developed between the rifle battalion commander and the commanders of artillery and tank support on the basis of their combined reconnaissance. Visual and radio signals are established to indicate when phase lines are reached and for the subordination of supporting artillery and tanks to small subgroups.

ASSAULT TECHNIQUES. Specific techniques have been developed by infantry and supporting arms in city warfare. In the assault of a strongly defended city block by a rifle battalion, the support group opens concentrated fire on the windows, doors, and along the flanks of the buildings. Mortar crews fire on intersections and areas to the rear of the block to prevent the enemy from organizing new firing positions. Automatic weapons direct their fire on the upper floors and roofs of buildings, while artillery fire is directed at the lower floors and cellars (fig. 64). Smoke-laying crews throw smoke grenades to cover the approach of tanks and self-propelled guns whose fire is directed toward the center of the block. As soon as a breach is made in the center of the block, the infiltration group dashes through the breach under cover of smoke. Small parties of the infiltration group expand their operations in all directions, taking positions inside the neutralized buildings to ward off counterattacks. Artillery fire shifts to the enemy position on the flanks. Tanks and self-propelled guns move into the neutralized sector out of the line of enemy direct fire, concentrating their attention on the corner buildings. The assault group, coordinating its operations with tanks and self-propelled guns, enters the remaining buildings in the block and destroys the enemy garrison.

An engineer mine-clearing company follows the rifle battalion into newly occupied positions. Each platoon consists of special mine-clearing subgroups organized as follows: a mine-reconnaissance section of five to six men, a mine-clearing section of eight to ten men, a mine-clearance checking section of four to five men, and a collecting and storing section of two to three men. The engineer company clears one to two large buildings or 20 to 30 small buildings per day. De-mining assignments are planned and controlled by the engineer staff of the formation in charge of the city sector. Tactically important buildings, streets, and blocks are given work-order priority. Trained engineer crews double-check all important areas, giving special attention to time bombs.

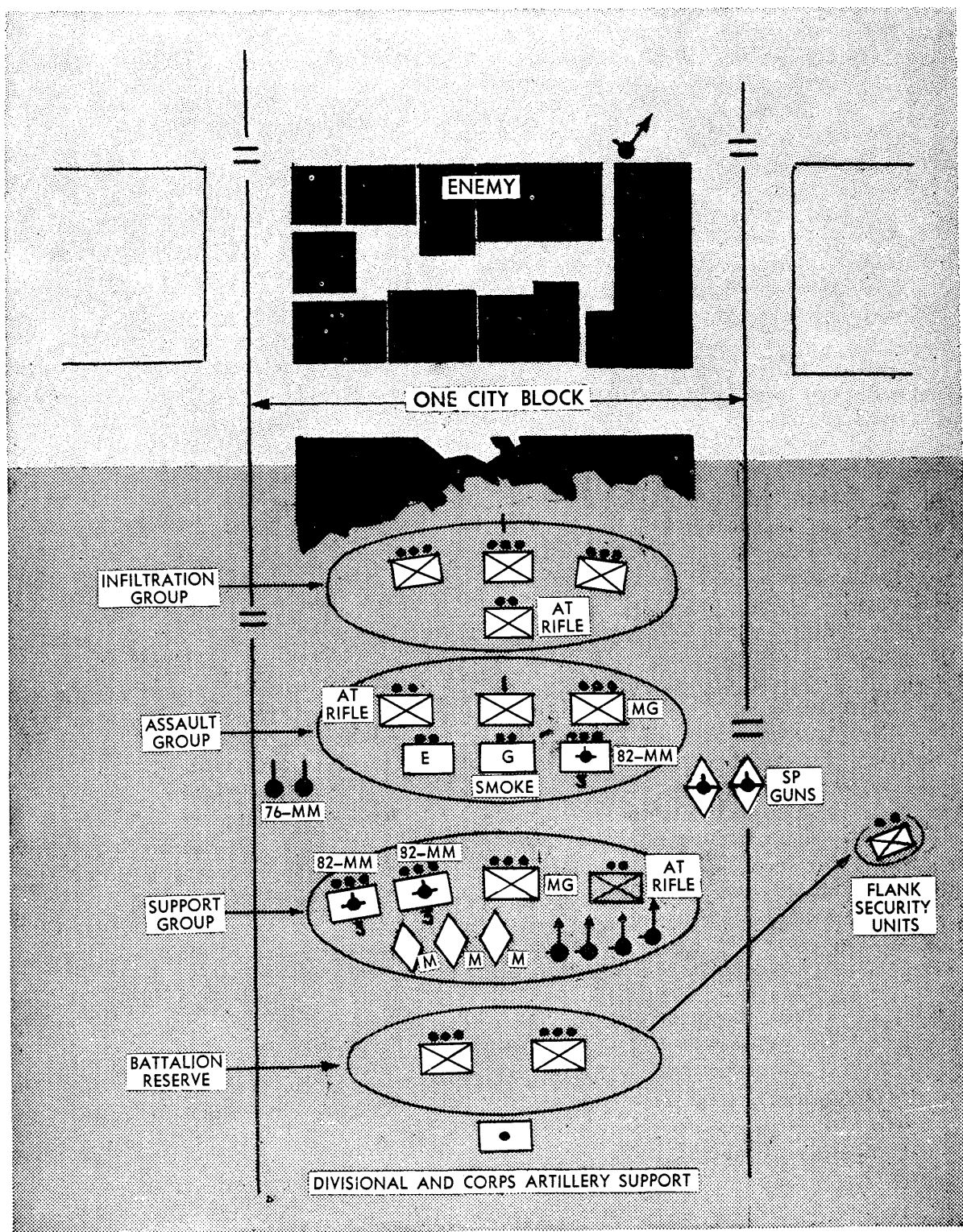


Figure 63. Combat formation of the rifle battalion for offensive operations in city warfare.

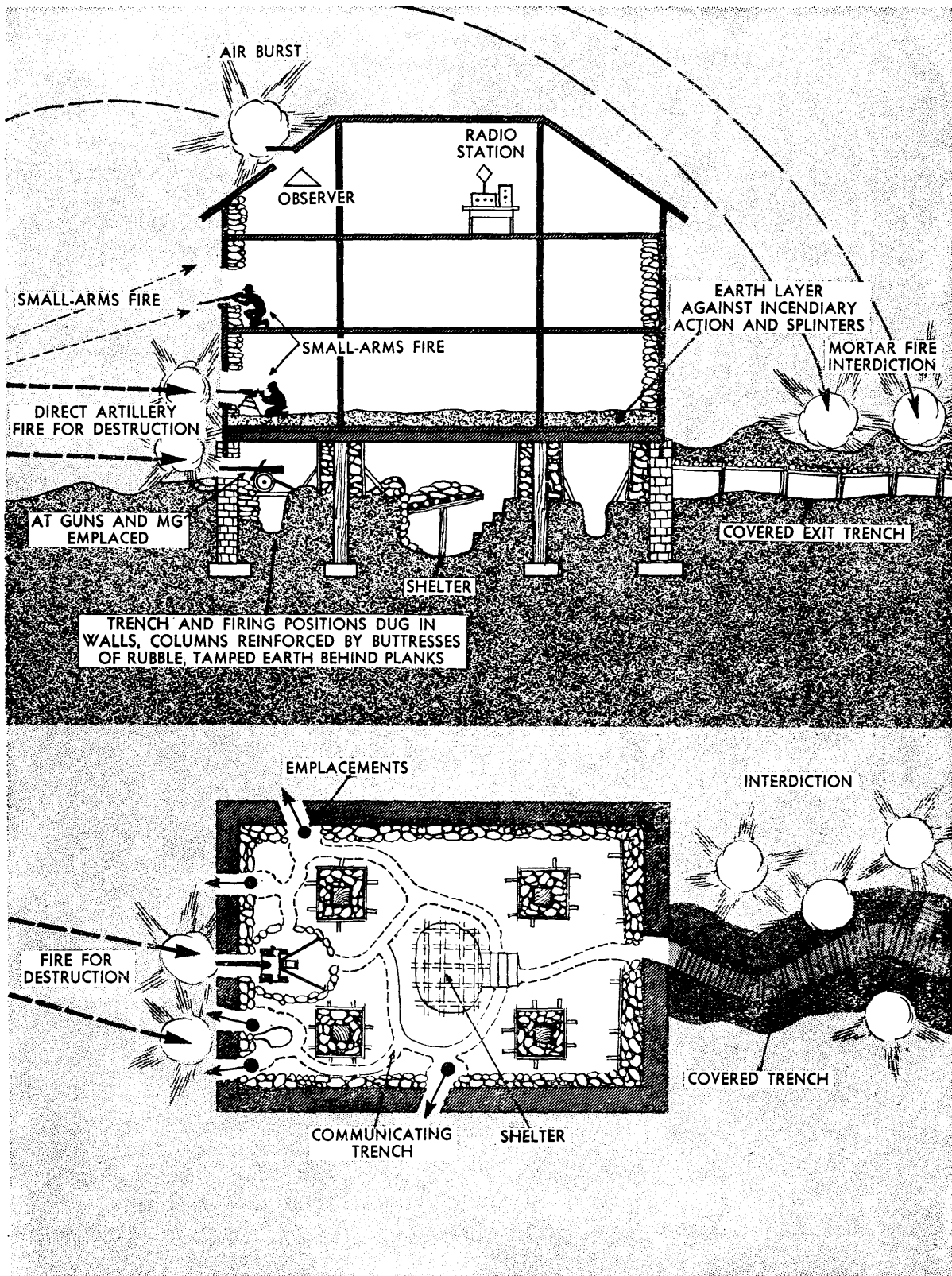


Figure 64. Fortification and fire attack of a building.

In the event that a block is neutralized and seized rapidly, the reserve is committed at once to consolidate the position and to carry the assault to the next block, denying the enemy time to reorganize his system of fire. The support group is displaced forward to engage new enemy firing positions, and the sequence of the operation is repeated. Tanks and self-propelled guns never move ahead of the infantry, to avoid entering firesacks or striking land mines. The signals of de-mining engineers and infantrymen guide the movements of armor.

ROLE OF ARTILLERY. The mission of light artillery is to destroy enemy firing positions by direct fire. In the assault of Berlin, up to 80 percent of all batteries attached to infantry units conducted direct fire from open positions. In Budapest, artillery ranging from 45-mm antitank guns to 203-mm howitzers fired directly at embrasures, windows, and every type of firing position. In addition to neutralizing enemy firing positions, direct fire is used to create breaches in buildings, walls, and barricades.

Guns are displaced forward alternately under heavy fire cover of other guns and infantry automatic weapons. Large-caliber howitzers, 152-mm and 203-mm, are used to destroy buildings completely. Tanks with large-caliber guns, self-propelled artillery, and large-caliber howitzers act as rams to make gaps in the enemy defenses.

Mortars of all calibers cover possible channels of enemy troop movements, such as street intersections, trenches, and alleys. Mortar firing positions are placed behind walls or inside buildings close to their objectives. Their mobility and effective fire from concealed positions provide strong fire support for the assault groups.

Artillery firing at high angles from concealed positions exercises great care in registration. The exact locations of friendly troops must be known, and each burst must be observed in firing for destruction. Registration shifts are made in two to four graduations from computed firing data, gradually approaching the target.

Rockets are used in closely congested building areas where direct artillery fire is restricted. The Soviets have used improvised launchers for firing rockets from the second and third floors of buildings.

The mission of the artillery reserve is counter-battery and countermortar fire. Massed fire from heavy batteries of the artillery reserve is used against citadels or other strong enemy fortified po-

sitions. Separate missions of the artillery reserve include interdiction and destruction of enemy supply dumps, headquarters, communication centers, and other important objectives. The artillery reserve is retained under centralized control under the corps and division artillery commanders.

COORDINATION. For effective coordination, the regimental command post is placed close to battalion command posts. Battalion combat formations become broken up to a great extent in city warfare. Staff officers are therefore given more authority to make decisions in areas under their control. Infantry units must be well trained in close-in combat, in the employment of grenades and demolitions, and particularly in coordinated fire and movement. To keep command posts constantly informed concerning the progress of local missions and troop dispositions, radio communication, signal flares, and messengers supplement and duplicate telephone systems which cannot be relied upon for uninterrupted operation.

Radio communication is often the only means of maintaining contact. Each battalion has one radio set; there are two in the regimental command post; two are located near the regimental Chief of Staff; and one set is kept in reserve. Stations are located on the top floors of buildings or in concealed, open areas to avoid the interference with transmission. Wire communication is maintained between the regimental command post and the battalions operating in the direction of the main effort. For close coordination, the regimental commander's observation post is at the forward battalion command post.

SECURITY. Convenient interior lines of communication give the defending forces the advantage of rapid troop concentration for counterattacks and particularly for large-scale break-out offensives. Large mobile reserves of infantry, artillery, and armor must be held in readiness to support any sector which may be assaulted by the enemy, especially the sectors in the direction of other enemy forces outside the encircled city. In local actions, every seized enemy building and block must be completely cleared of the enemy from cellar to roof, then fortified and protected against enemy counterattacks by automatic weapons, mines, and supporting fire. A specially trained security detachment in every assault group has the specific function of organizing defensive positions in newly captured buildings and block sectors. Mortar fire and self-propelled guns are particularly effective in repelling enemy counterattacks.

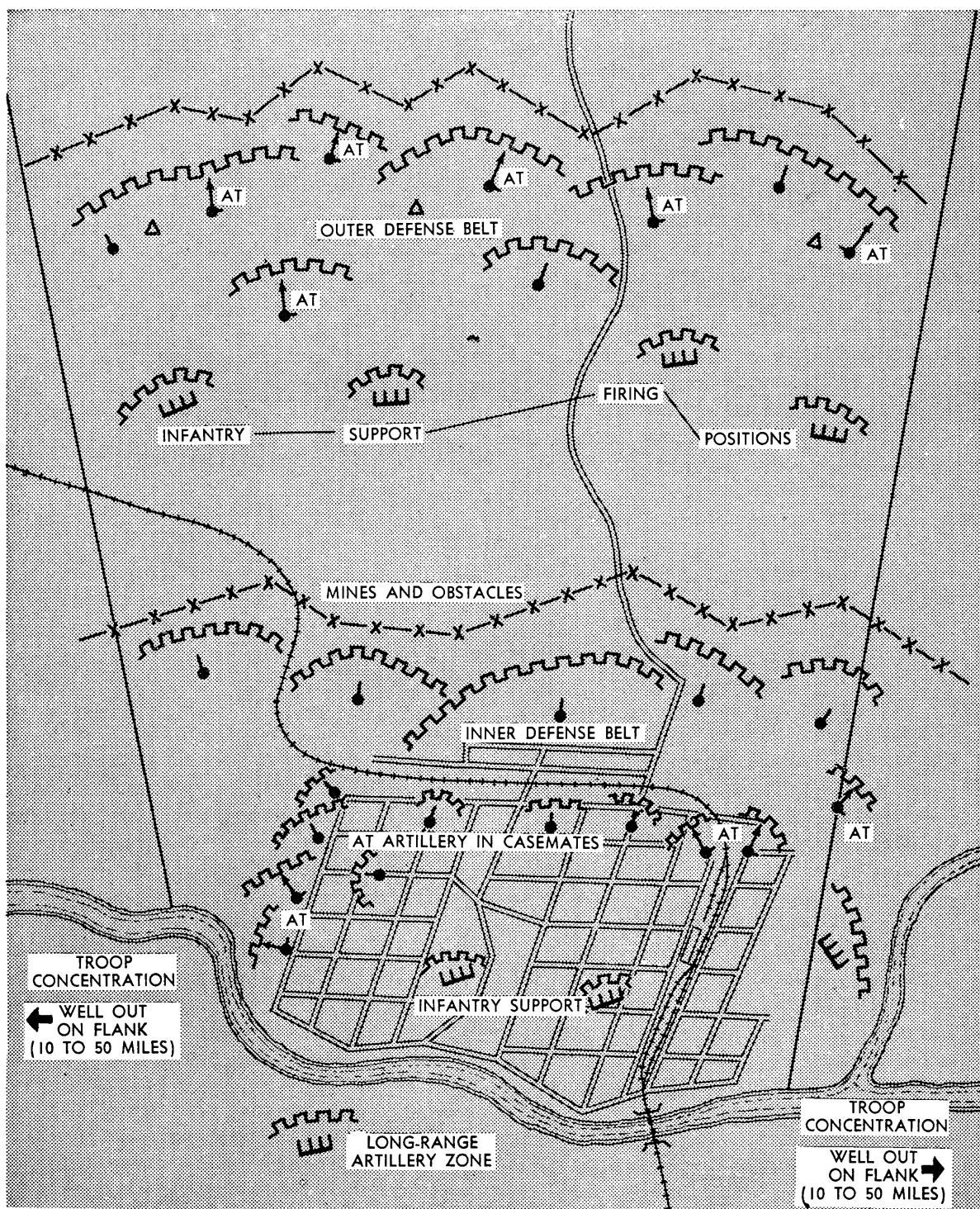


Figure 65. City defenses in depth.

2. DEFENSE OF CITIES

The Red Army has employed highly effective defensive tactics in the defense of cities. The strategically vital cities of Leningrad, Moscow, and Stalingrad were successfully defended despite full-scale enemy offensive operations. Leningrad was under heavy long-range artillery fire for 2½ years, while Stalingrad was completely destroyed but never fully occupied by the enemy.

a. Tactical doctrine. Basic principles characteristic of Red Army tactics in the defense of cities are the mobilization of the civilian population for defensive city combat, the development of deeply echeloned defenses extending far forward from the city, and the concentration of large bodies of troops on both flanks of the city (Figure 65).

The civilian population is politically indoctrinated to take part in the organized and active defense of the city. Civilian military training in elementary tactics, rifle marksmanship, and defense against air attack were organized in peacetime by the Ossovahim Society and the Komosomol League. When the battle front approaches a city, the civilian population organized into combat and service units in accordance with individual ability, assists in the construction of field fortifications, street barricades, and shelters. Intensive counter-intelligence screening of all civilians prevents any subversive activities.

Defenses are organized in depth in order to resist effectively the enemy massed-tank attacks which follow extensive air bombardment and artillery preparation. Particular attention is directed to antitank defenses consisting of obstacles, traps, and numerous concealed antitank guns. Heavy losses are inflicted on the enemy by permitting his forces to penetrate between strong points and thereby channelizing his attack into firesacks. A destroyed city is even more suited to prolonged and stubborn defense than one with all its buildings intact, since the debris offers greater opportunities for camouflage, surprise, and ambush than do standing buildings. Furthermore, debris is not as likely to be affected by subsequent bombardments and is invulnerable to incendiary attack. Troops are taught to improvise fortified positions among ruins and charred remains of houses as quickly as possible, and to provide a number of switch positions which are interconnected by a system of deep trenches.

The primary mission of troop concentrations on both flanks of a defended city is to prevent encirclement of the city by reinforcing the flank fortifica-

tions. Soviet combat experience has demonstrated that an enemy brought to a halt when already deep into the city's defenses and forced to wage exhausting combat for a prolonged period is a ready target for encirclement and destruction by fresh, constantly reinforced flank forces.

b. Defensive technique. The conduct of defense in city warfare is similar to that of fortified zones. Emphasis is placed on applicable defensive techniques, such as the elimination of dead spaces by enfilade fire and mobile groups of submachine gunners, which operate from under improvised cover and attack enemy assault groups in the flank and rear. Large numbers of snipers are used with the special mission of picking off officers and noncommissioned officers. Evacuation to the rear, as well as forward movement of supplies, reinforcement, and replacements, takes place at night.

The principal defensive objective is to force the enemy to abandon large-scale armored attacks by making the penetration of the deep defensive positions too costly. Operations will then revert to intense house-to-house combat between relatively small infantry and engineer assault groups supported by direct-fire artillery, automatic weapons, demolitions, and flame throwers.

The transformation of individual houses into strong points involves the following measures:

- Digging firing, shelter, and communication trenches (including at least one hidden exit trench) in the basement.

- Breaking through firing embrasures.

- Reinforcing the foundations with earth-and-rubble filled buttresses behind chicken wire, or plank retaining walls.

- Constructing safety underpinning as required, and covering the floor of the first story with a foot of earth for fire- and splinter-proofing.

The upper stories are used for observations, radio communications and sniping.

Defensive warfare has two overlapping phases, each with its own system of organization. In the first phase, prepared defenses which extend throughout the city and its approaches are organized as in the defense of a fortified zone, with particular emphasis on all types of antitank weapons. As enemy artillery and air attacks destroy city structures, a progressive transition in the organization of the defense takes place until the city is a continuous mass of rubble. The defenses now consist

of a complicated tangle of trenches, deep dugouts under blasted buildings, and strongholds in ruins or in remains of large and strongly reinforced concrete buildings such as abound in factory areas. Large quantities of direct-fire artillery are emplaced in hidden firing positions to limit the progress of enemy assault. Rear areas contain many batteries of heavy artillery which support the city defenses. The defensive system of Stalingrad was typical of such an organization and proved that the ruins of a city can constitute one of the most formidable types of fortifications in modern warfare.

Section IV. OPERATIONS AT RIVER LINES AND AMPHIBIOUS OPERATIONS

1. RIVER CROSSINGS

The Red Army crossed every major river in Europe between the Volga and the Elbe during the course of the war. Successive operations of many types resulted in improved techniques and new methods, such as the underwater bridge.

a. Basic doctrine. Soviet doctrine in river-crossing operations places great emphasis on certain tactical measures which differ from U. S. practice, although the general principles of river-crossing operations are basically identical. All of the most successful Soviet river assaults in World War II were carried out on broad fronts. By restricting the crossing area to a narrow front, the Red Army appreciates, surprise is lost and enemy forces concentrate in the selected area. Diversionary or feint crossings in considerable strength are normally made to provide alternate crossing sites to which the main forces can be diverted, should the main crossings fail or be held up. The planning of the operation is detailed and intricate, and orders are given in writing. Concealment of crossing equipment and troops is carried out under the strictest discipline. The greatest single difference between Soviet and Allied river-crossing operations, however, has been in large-scale employment by the Red Army of rafts, bridge sections, and boats or ferries to transport armor, artillery, and loaded vehicles across water; whereas Allied forces generally waited until bridges were built.

Because of its superior accuracy, the Red Army places far greater reliance on artillery fire than on air action in river-crossing operations. Considerable artillery strength is concentrated, ranging up

to 240 to 320 pieces of all calibers—including 120-mm mortars—per miles of front. The greatest emphasis is placed on the use of local materials for the construction of boats, rafts, and bridges. The tempo of river-crossing operations is highly variable, depending entirely on the tactical location of the river line with respect to the offensive operations. Major water barriers were often reached at the end of extensive advances; and long periods of preparation were required, due not so much to the lack of crossing capabilities as to the need for consolidating the newly won territory and for bringing up troops and supplies. Rivers within the range of offensive objectives constituted no serious obstacles and were usually taken in stride.

b. Role of various arms in river-crossing operations.

ENGINEERS. Engineers play the dominant role in river-crossing operations. There is no essential difference between U. S. and Red Army doctrines with respect to the command responsibility or the functions of the engineer arm in the organization, the assault, or the construction phases. As in the U. S. Army, the maintenance of bridges, traffic control, and forward displacement of engineer equipment are also engineer functions in the Red Army.

River crossings on broad fronts require the concentration of far more equipment than the organic engineer units of the formation and attached GHQ engineer units can provide from their organizational equipment. The Red Army engineers have the tremendous task of constructing crossing equipment, ranging from wooden boats to heavy bridge sections, out of local materials. For example, 10,000 wooden boats were built entirely of local materials, except for nails, in 10 days prior to the crossing of the Vistula. In such situations infantry units do the work under engineer supervision. In addition, the operation of signal stations and troop regulating points by Red Army engineers involves operational control of large bodies of troops and equipment on a broad front.

ARTILLERY. Artillery has three basic missions in river-crossing operations: to destroy enemy defenses, to cover the crossing of troops, and to transport the artillery across the river. In Red Army practice a river crossing requires the same amount of artillery as the assault of a fully developed defensive position. The density of artillery and 120-mm mortars required is 240 to 320 barrels per mile of front. To obtain this concentration, about 120 to 200 extra guns are usually required per mile of front. This

presents the difficult problem of concentrating large artillery units and at the same time maintaining surprise. Usually a concentration point is selected 10 to 16 miles from the proposed firing positions of the guns. Routes to the firing positions are carefully planned and covered in several night practice marches by all battery commanders. Strict control of fire is enforced during the concentration phase by permitting only two batteries per corps to engage in counterbattery fire, by restricting antiaircraft artillery to a limited number of duty batteries, and by using roving guns for deception. Great importance is attached to direct artillery fire; 70 to 80 percent of the regimental artillery is used in direct fire. A considerable portion of the antitank and regimental guns designated for direct-fire missions are dug in by night close to the river bank, and completely concealed by masking with shrubbery or tarpaulins with sand cover.

The preliminary bombardment of enemy positions by air and artillery is directed against enemy defenses and firing positions which can interfere with crossing operations. The first assault echelon occupies the line of departure positions 3 to 4 hours before H-hour.

The full intensity of the bombardment is developed as the first echelon moves its assault boats to the river for embarkation under cover of direct-fire artillery. The fire density is two to three bursts per minute on a front of 10 to 15 yards, lasting from 10 to 20 minutes. This is followed by less intense bombardment for 30 to 40 minutes, during which time the first assault echelon crosses to the opposite bank. The creeping barrage begins on both visual and radio signals from the assaulting infantry; time systems are considered unreliable. Forward observers and artillery observation posts direct barrage lifts of from 50 to 100 yards. The barrage is held at main objectives, which are usually at about 500- to 700-yard intervals, until the advancing infantry is observed to be 200 to 250 yards from them; then the barrage creeps forward in short intermediate lifts to the next objective. Surprise night crossings are made without artillery preparation. All direct-fire guns are held in readiness in their firing positions to neutralize enemy weapons, should the crossing be discovered. Supporting medium and heavy artillery and 120-mm mortars are held in readiness to fire on previously registered enemy positions and assembly areas.

Infantry guns and mortars, as well as four addi-

tional antitank guns per battalion, are sent across with the first echelon. Artillery crews are reinforced by 50 percent personnel reserves.

Artillery crosses on ferries and improvised rafts until the floating bridges are in place, but no more than one-third of the artillery is ever in motion at one time. During a pursuit, the time element is considered to be of such vital importance that forward units never wait for the arrival of bridging equipment if there is a chance to seize a bridgehead. All artillery units are trained in ferrying their guns across rivers by various improvised methods using local materials.

ARMOR. Armored units carry bridging equipment adequate for crossing rivers up to 300 yards in width. The motorized infantry generally crosses first to establish a bridgehead. Tank units enlarge the bridgehead, and wait until the main forces have crossed before continuing offensive operations. Amphibious tanks and ducks accompany the first infantry assault wave. Tanks approach river lines on a wide front and avoid concentrations. Reconnaissance for fords and undamaged bridges is always carried out. On many occasions tank spearheads and advance reconnaissance detachments have seized bridges intact as the result of unexpected wide out-flanking maneuvers.

ANTIAIRCRAFT ARTILLERY. During the assault phase, antiaircraft batteries protect the crossing area from the friendly side of the river; in some cases antiaircraft guns are mounted on rafts. As soon as possible, additional batteries are also emplaced on the far side of the river. Airborne troops have not been used on a large scale in any Red Army river-crossing operation. Parachute troops of battalion size are used against enemy communications 5 to 10 miles from the river to hamper enemy movements, or are given missions of destroying bridges, flood gates, locks, etc.

c. The preparation phase. Thorough ground reconnaissance is organized as soon as a river is reached. Aerial photographs are continuously made to supplement ground observation. Engineer reconnaissance gives particular attention to local material for use in the crossing; to the characteristics of the river, its banks, and most suitable approaches; and to enemy obstacles and defensive installations across the river. Artillery reconnaissance determines the location and strength of enemy firing positions and plans the artillery system of fire for the preparation and assault phases. Observation posts manned by

officers are usually placed 1,000 yards apart with mobile observation posts covering intermediate positions. Patrols of specialist troops operate along the whole front on the enemy side of the river to gain

concentration of forces in the area selected for the assault. This concentration is never hurried, due to the extreme emphasis placed by the Soviets on very thorough concealment.

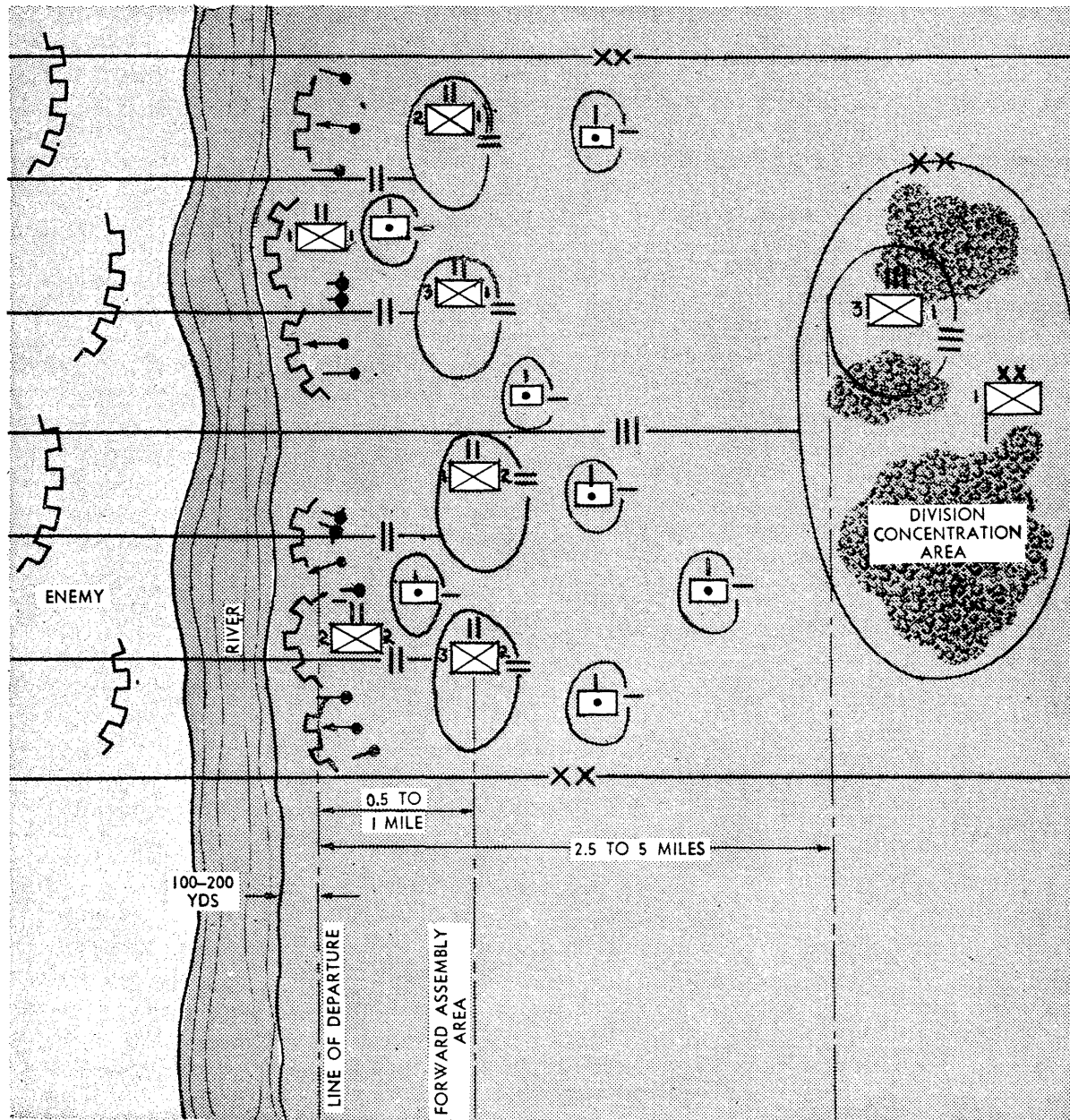


Figure 66. Deployment of troops prior to crossing operations.

further and more detailed information, and to remove underwater obstacles such as wire entanglements, posts, and mines.

During the preparatory stage, a period of at least 2 or 3 weeks is required to carry out the necessary

The organization of troops for the crossing operation follows a definite pattern (figs. 66 and 67). The division concentration areas lie from 2 to 5 miles from the river, wherever the greatest concealment is available. The forward assembly area is

situated from $\frac{2}{3}$ to 1 mile from the river bank on a wide front. Thoroughly concealed dumps of medium and heavy pontons and bridging materials are placed from 300 to 900 yards from the river bank. Assault boats and spare equipment are con-

assisted are the chief engineers of subordinate units down to company level. The immediate responsibility of every engineer officer is that sector of the crossing operation to which his unit is assigned. Three categories of crossing points are

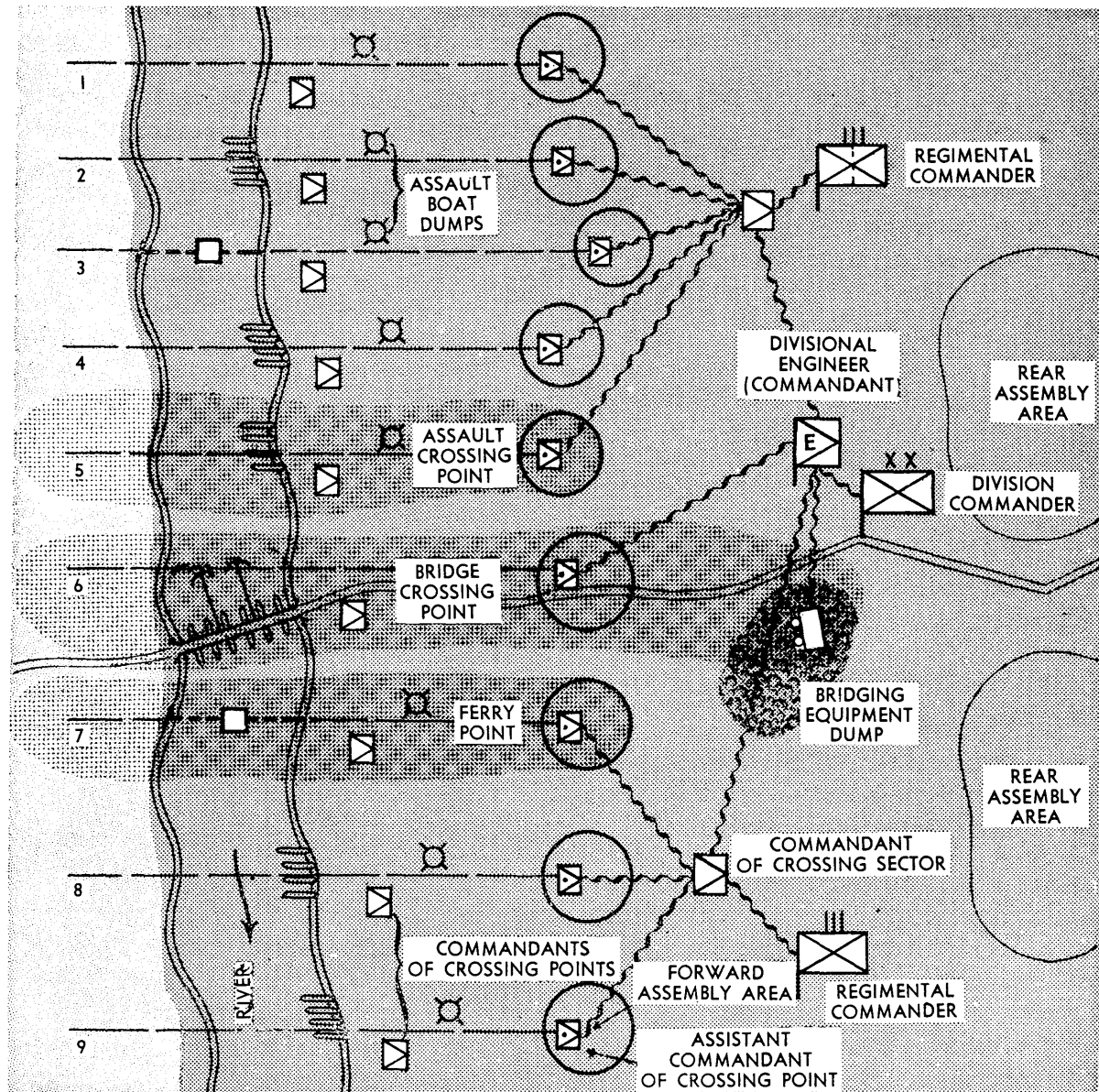


Figure 67. Organization of crossing control.

cealed under foliage or buried in sand in the forward zone 100 to 200 yards from the water (fig. 68).

The Commander of the entire river-crossing operation is the chief engineer of the formation. The Commander controls all troop movements from the forward assembly area to the opposite shore. His

organized within the general crossing area. These are the assault-boat crossing points, the ferrying points, and the bridge crossing points. Assault-boat equipment is concealed along a wide front, while ferrying and bridge equipment are concentrated further to the rear in concealed areas adjacent

to approach roads leading to the river (figs. 69 and 70).

d. Assault phase. The assault phase is usually launched at night, although daytime crossings under smoke cover have also taken place.

The rifle battalion is the basic unit for which assault-boat crossings are established. One or two crossing points are established per battalion as re-

where slit trenches are dug to conceal them. Trails marked by tape or wire lead to the assault boat dispersal area and thence to the line of embarkation. Signal points for regulating the troop movements from the assembly areas to the line of departure and to the loading line are operated by engineer personnel. Engineer guides and signal control stations regulate the movement of each wave in con-

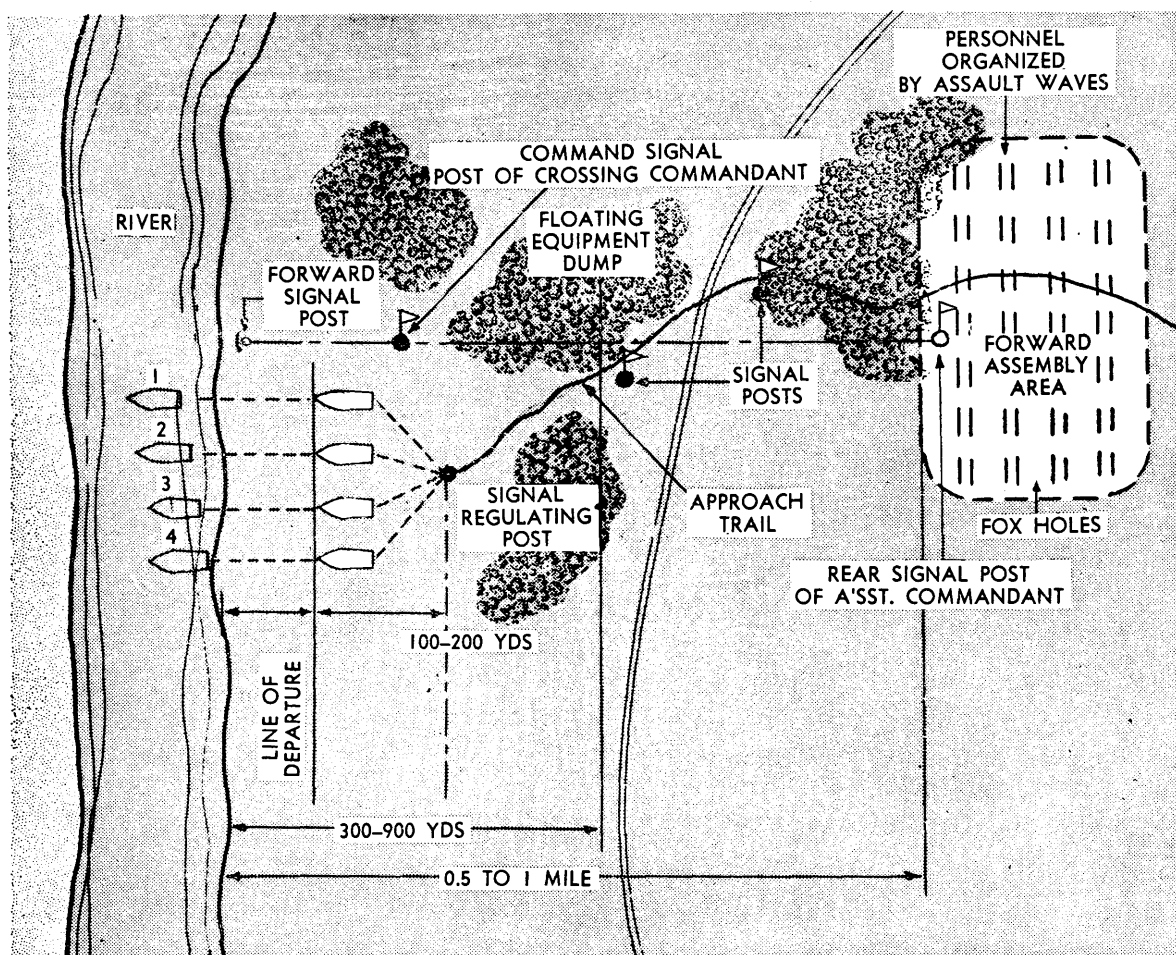


Figure 68. Assault-boat crossing point.

quired by the terrain and by tactical considerations. At the beginning of the assault, boats are placed at intervals of 15 to 30 yards along the line of embarkation, making the battalion front 200 to 550 yards wide. Equipment consists of organizational inflated rubber boats, pontoons, and folding canvas boats; local fishing boats; or rafts and boats specially constructed to make up for deficiencies in requirements.

The organization of battalion personnel in assault waves is completed in the forward assembly area

in conformity with the established assault time schedule. The first wave loads into the boats which are manned by engineer crews. Artillery preparation against enemy defenses and firing positions usually precedes the assault, but on many occasions the element of surprise was considered to be sufficiently important to attempt silent crossings.

Machine guns, mortars, and light regimental artillery—as well as pioneers with a large supply of mines—accompany the first echelon. The pioneers clear minefields and wire obstacles, and lay

their own mines in the most likely approaches for enemy counterattacks. Upon debarking, the infantry with their supporting weapons organize to attack the enemy screening forces. The artillery barrage across the river moves forward in jumps to support the assault.

Assault boats crossing a 500-foot river with average current make one round trip in 10 minutes, with oars; or one round trip in 6 minutes, with outboard motors. The number of boats required varies with the tactical decision concerning the

Use of fords is made wherever possible. Water depth, and not the character of the river bed, is the determining factor. If bundles of fascines and rock fills are not adequate to cover channels, holes, or soft spots at the proposed fording point, flexible wooden mats interwoven with rope are sunk in place by driving short piles along the edges or by weighting the mat down with rock.

e. Ferrying Phase. Ferrying operations begin after the assaulting infantry consolidates a small bridgehead—about 600 yards in depth—and con-

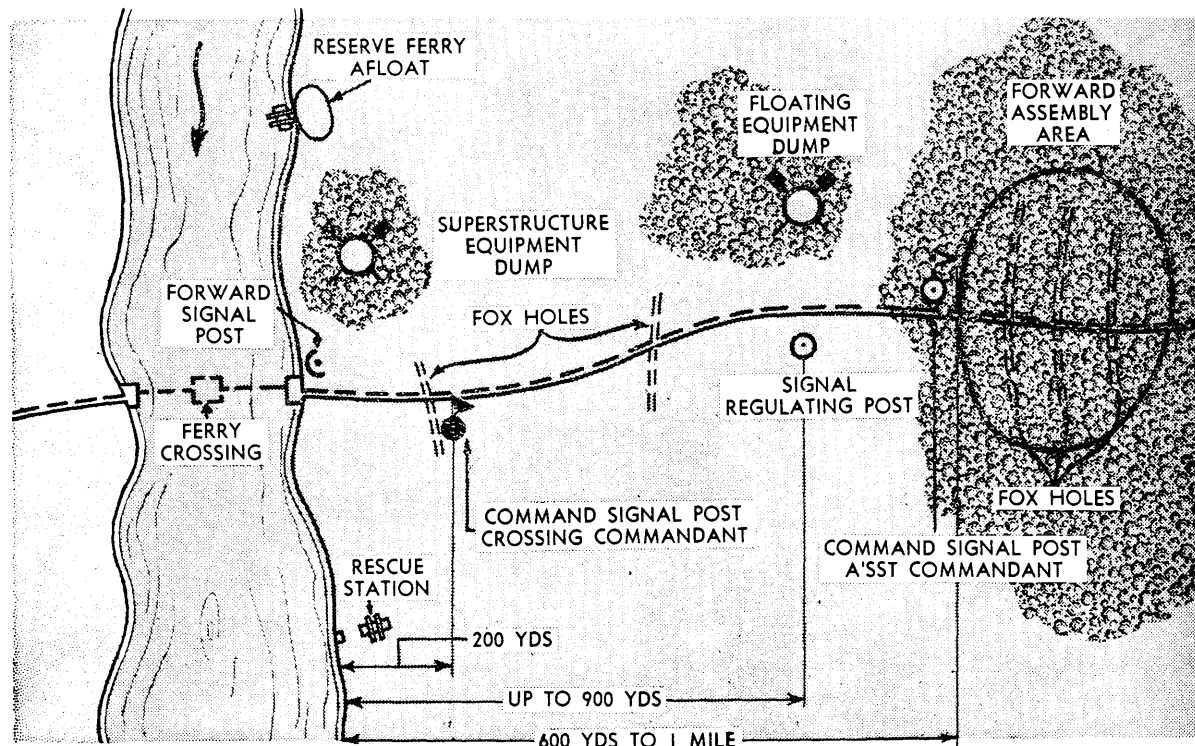


Figure 69. Ferry crossing point.

number of assault waves per battalion. The rifle battalion without its artillery (75-ton load) may cross in a single wave in 36 A-3 large pneumatic boats or light pontons, in 12 heavy pontons, or over 9-foot bridge sets of eight sections. The 10-foot footbridge section on four floats can carry 10 men; the light collapsible boats and pneumatic boats, 12 men; the light pontons, 25 men; and the heavy ponton sections, 50 men. Amphibious tanks and other amphibious vehicles accompany the first assault wave. In the crossing of the Svir River, U. S. lend-lease ducks were used effectively in the assault phase. Recent trends in river-crossing operations indicate an increased employment of amphibious vehicles.

tinue during all crossing phases, even after a secure bridgehead has been established and bridges are in operation. Ferries supplement bridges in transporting the maximum traffic across the river in the shortest time, and serve as reserve bridge sections in repairing combat damage. The ferry point is organized like the assault-boat crossing point.

The troop assembly area is located 500 yards to 1 mile from the river. A floating equipment dump is concealed about one-half mile from the river, and superstructure materials are hidden in a second dump about one-quarter of a mile from the river.

The approach road or trail to the ferry loading point is controlled by engineer signal control stations. An upstream ferry construction point is

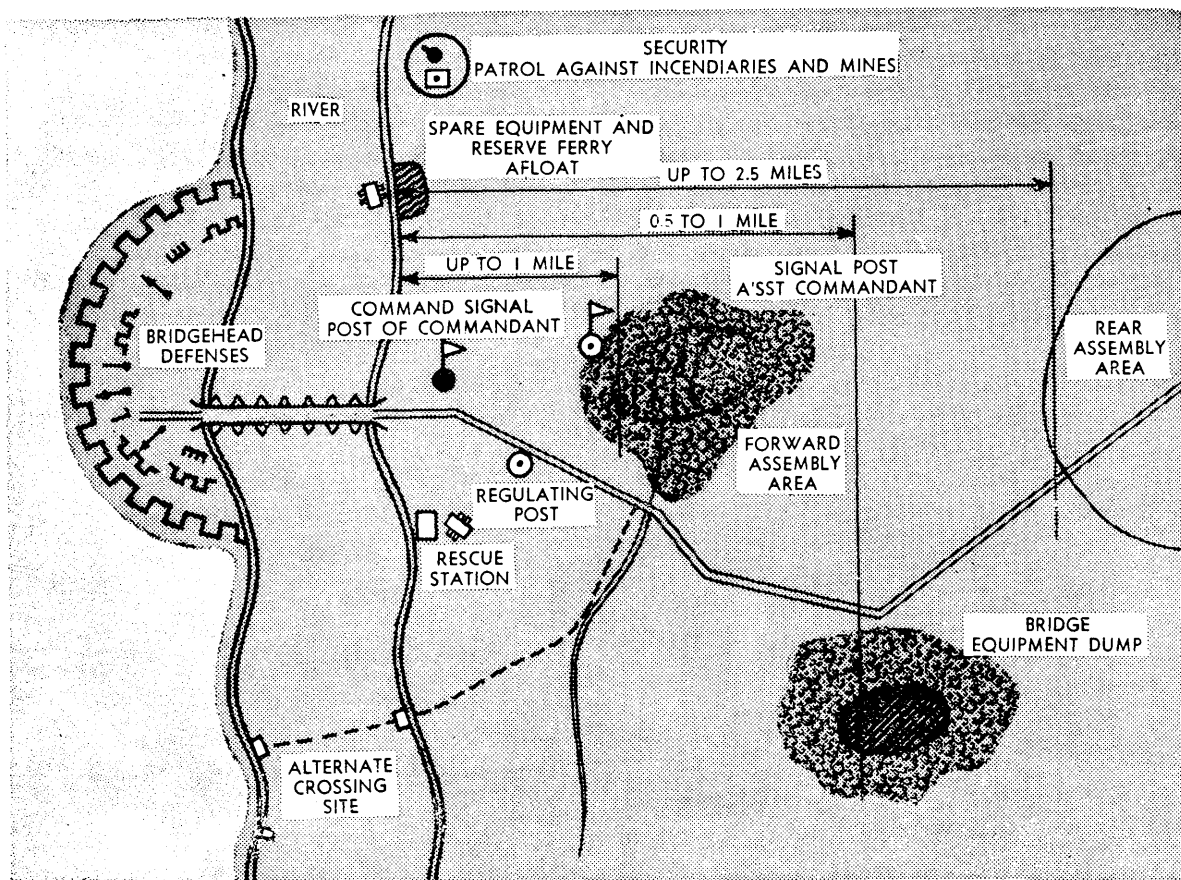


Figure 70. Ponton bridge crossing.

selected to supplement the crossing point, while a rescue station site is established downstream (fig. 69). Ferries constructed of organizational floating bridge sections carry from 5- to 16-ton loads for light ponton sections, and from 16 to 100 tons for heavy ponton sections. Carrying capacity is increased by adding additional pontoons and by coupling two bridge sections. Two-lane coupled bridge sections on heavy pontoons may carry four trucks or the equivalent weight of tanks or artillery pieces. Generally, two single-lane bridge sections carrying two vehicles are used in the initial phases to facilitate the rapid movement of ferries.

Small power launches, outboard motors, poles, or cables are employed in ferrying operations. Five round trips can be made per hour across a 500-foot river by a motor-drawn ferry as compared to two to three round trips without power. The greatest single factor in determining how rapidly a unit may be transported at any one ferry crossing is the ferry capacity. A rifle battalion with its com-

plete supply train may be loaded in 19 sixteen-ton ferry loads or 48 five-ton ferry loads. Using the larger ferries, in a single crossing, the battalion can cross a 500-foot river in 75 minutes, whereas using the smaller ferries over 3 hours are required. A rifle division generally crosses in two echelons, requiring 2 to 6 hours, depending on the number of ferry crossings and the size of ferries used. Ferries are assembled in 15 to 50 minutes depending on their size; docks are constructed in about 20 minutes, and unloading requires 10 to 15 minutes. As in the case of assault boats, extensive improvisation with local materials has taken place in the construction of ferries. Tables of buoyancy for all types of wood, barrels, drums, etc. are carried by engineers to facilitate rapid calculations in designing improvised ferries.

f. Bridging phase. The bridge crossing sector is identical in organization to the ferry point sector with the exception that bridging equipment is concealed farther from the river. The approach road

is capable of carrying heavy traffic, and runs from the rear assembly area of the main body (about 3 miles from the river) to the bridge site.

Bridging begins at the earliest possible opportunity, generally when the bridgehead is about 2 miles deep. Initially, the bridging is of light ponton construction to facilitate rapid passage of light equipment and infantry. Later, heavy ponton bridges or fixed wooden bridges are constructed by GHQ engineer troops. Large reserves of bridging equipment are at hand under the control of special repair units. Every precaution is taken to insure the continuous flow of troops and equipment across the river.

Strong mesh wire is hung upstream to stop floating mines; emergency and rescue stations are located down stream; look-out stations and flood-warning posts are placed upstream; alternate ferrying points and bridge sites are established and cables or hawsers are stretched across the river at various points to facilitate supplementary boat and raft crossings.

Upstream, an emergency patrol station, armed with machine guns and artillery, is on the alert for floating mines, floating incendiary materials, and enemy river gunboats. Camouflaged emergency floating bridge sections are anchored upstream, ready to replace a damaged bridge section. On the downstream side is located a rescue station, equipped with boats and rafts, as well as a reserve bridge crossing site. Floating bridge capacities range from 5 tons to 16 tons for light ponton bridges, and from 16 tons to 100 tons for heavy ponton bridges. Construction time varies from 75 minutes for a 450-foot, 5-ton bridge to 4 hours for a 100-ton bridge of the same length.

Construction time for floating bridges compares favorably with U. S. practice. Some categories of heavy ponton bridges are assembled in less time by the Red Army engineers than comparable U. S. floating bridges, with the notable exception of the treadway bridge of U. S. armored units. Red Army Engineer units use about 50 percent more men for assembling comparable floating bridges.

With the exception of bridge-laying tanks and the trestle spans of floating bridges, no prefabricated organizational fixed bridge equipment has been in evidence. The Red Army relies entirely on its highly developed technique of constructing wooden fixed bridges from materials brought forward, supplemented by lumber found locally. Six hours for the

construction of a two-lane, 430-foot, 60-ton capacity bridge is considered normal. The railroad bridge across the Dniepr at Kiev was built in 12 days, with 7,000 men and women engaged in the construction.

Red Army practice in wooden bridge construction is unique in its preference for wide piers. Rock-filled wooden cribs, piers formed by inclined trestle and pile bents, and square trestle piers are common (figs. 71 and 72). Piles are driven with heavy cross-lagging in temporary construction, and the unsupported span is strongly reinforced by inclined struts anchored on the piers (fig. 73).

g. Underwater bridges. Three types of underwater bridges have been developed by the Red Army engineers (fig. 74). In one case, four-pile bents at 15-foot spans were driven with muffled pile drivers and cut by special underwater saws 4 feet below the surface. Special caps with metal straps were then floated out and bolted to the piles. Log stringers and plank decking were easily bolted to the caps. All work was done at night so that the bridge was not discovered by the enemy. Underwater bridges of spans up to 36 feet are built on underwater rock-filled timber cribs anchored to corner piles. Steel I-beam stringers rest on the cup, to which the decking is securely fastened by bolts running through the guardrails. Short rail struts support a cable at the water surface to indicate the edges of the bridge. For shallow-river underwater bridges, short piles are driven for anchoring timber-grillage (cross layers of trimmed logs) piers to which stringers weighed down by rock are fastened.

At Voronezh, during the Red Army offensive in the spring of 1943, the underwater bridge served to deceive the enemy as to the offensive capabilities of forces in a relatively small bridgehead to which the bridge was secretly constructed. Large armored formations crossed the bridge at night, and surprised the enemy with a powerful and successful offensive.

h. Crossings of frozen rivers. The techniques for crossing frozen rivers have been thoroughly developed in the Red Army as the result of years of experimentation on the supporting strength of ice. Specific regulations are prescribed for allowable loads, spacing of vehicles, and the proper manner for placing plank roadways to distribute the load. Thin ice is crossed by infantry on long boards; loads on flat sleds are pulled across by ropes. For vehicles and artillery, bridges are quickly built by driving piles through the ice, using the ice to support the working crews. Such piles are almost

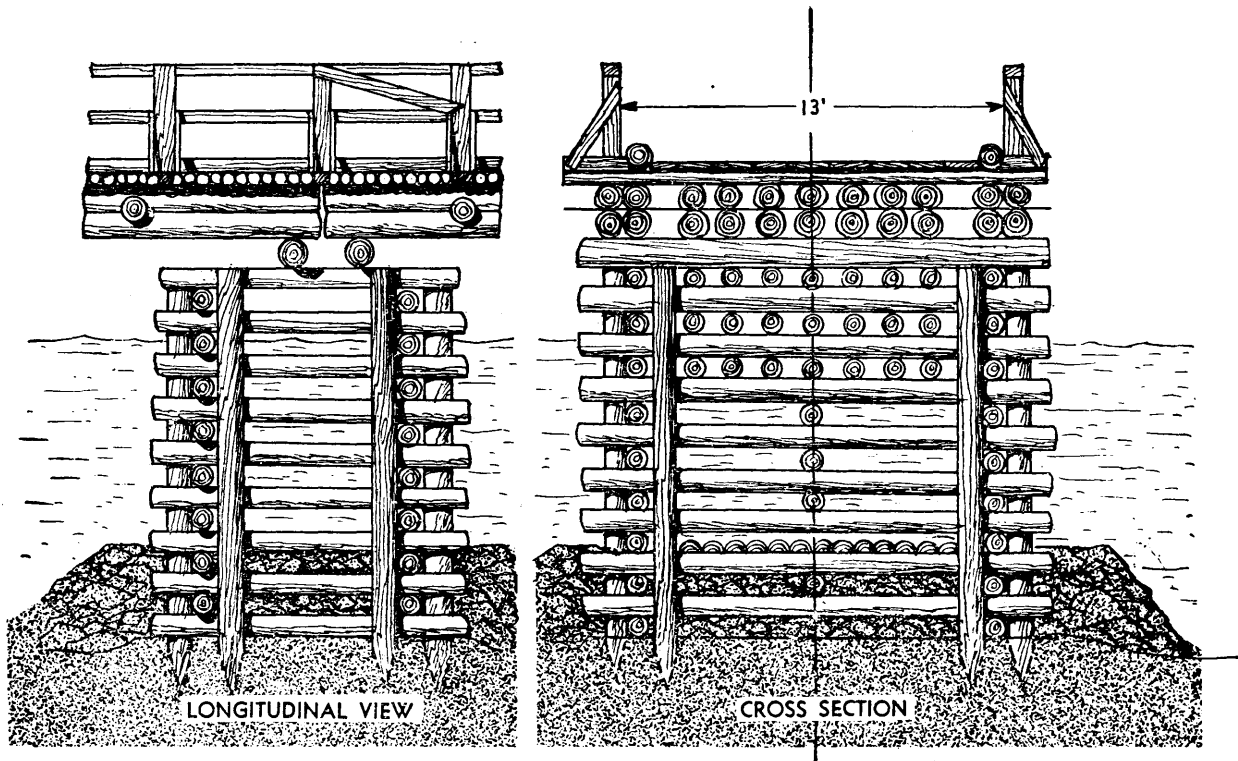


Figure 71. Grillage-type pier.

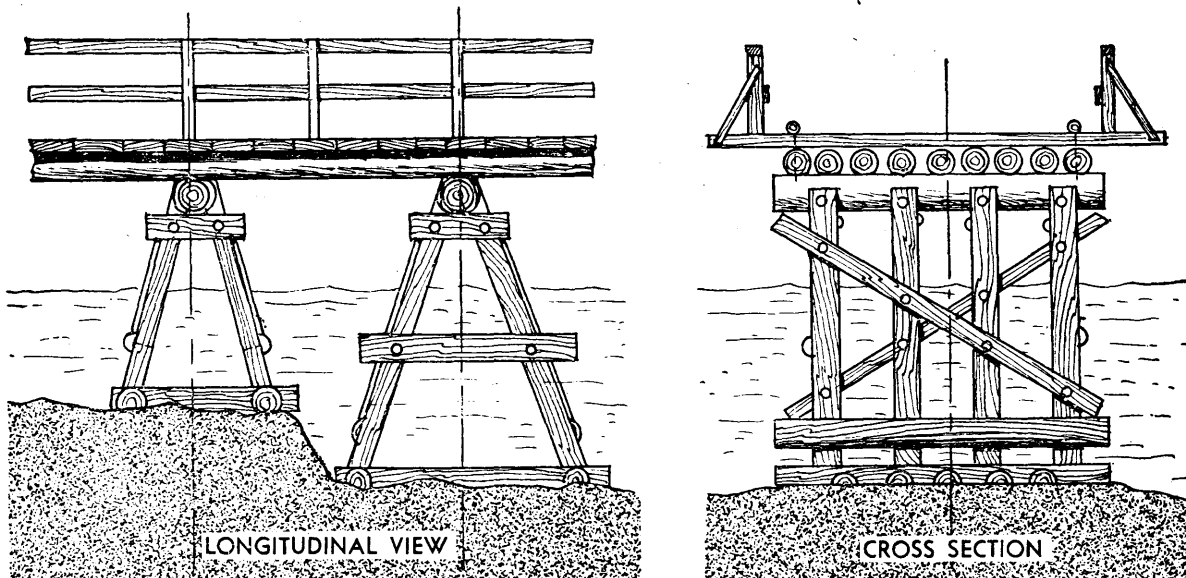


Figure 72. Inclined bent type of support.

always cross-lagged several feet above the point so that little settling will take place and driving can be done with large wooden mauls.

2. DEFENSE OF RIVER LINES

In the early years of the war, river lines constituted a vital part of the Red Army's defensive positions at the most important sectors of the front. The successful defense of the Voronezh positions along

the upper Don prevented the enemy from outflanking Moscow from the south in August 1942. The historic defense of Stalingrad and the Volga River line for 106 days prevented the enemy from splitting the Red Army's continuous front in late 1942.

The outstanding tactical characteristic of the Red Army doctrine in the defense of river lines is that one or more powerful bridgeheads must be retained on the enemy side of the river. Such bridgeheads

deny the enemy control of the river and restrict the maneuverability of enemy forces on their side of the river because of the constant threat of counterattacks from the bridgeheads. River gunboats supplement the defensive power of artillery and deny the enemy control of the river. Medium and heavy

artillery support the bridgehead defenses across the river. The units defending the bridgehead have a large amount of direct-fire artillery as well as tank support. Replacements and supplies are brought across the river at night to maintain the maximum combat strength of the defensive position. Reten-

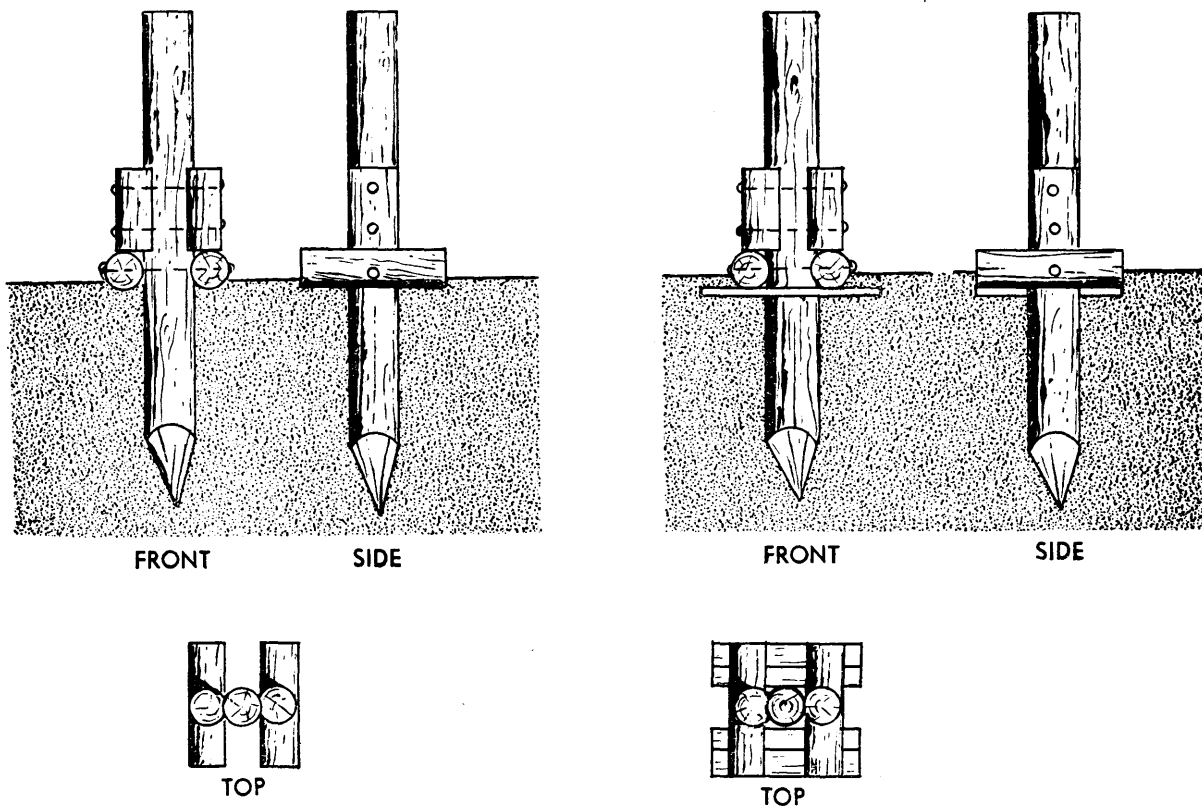


Figure 73. Piles with cross-lagging.

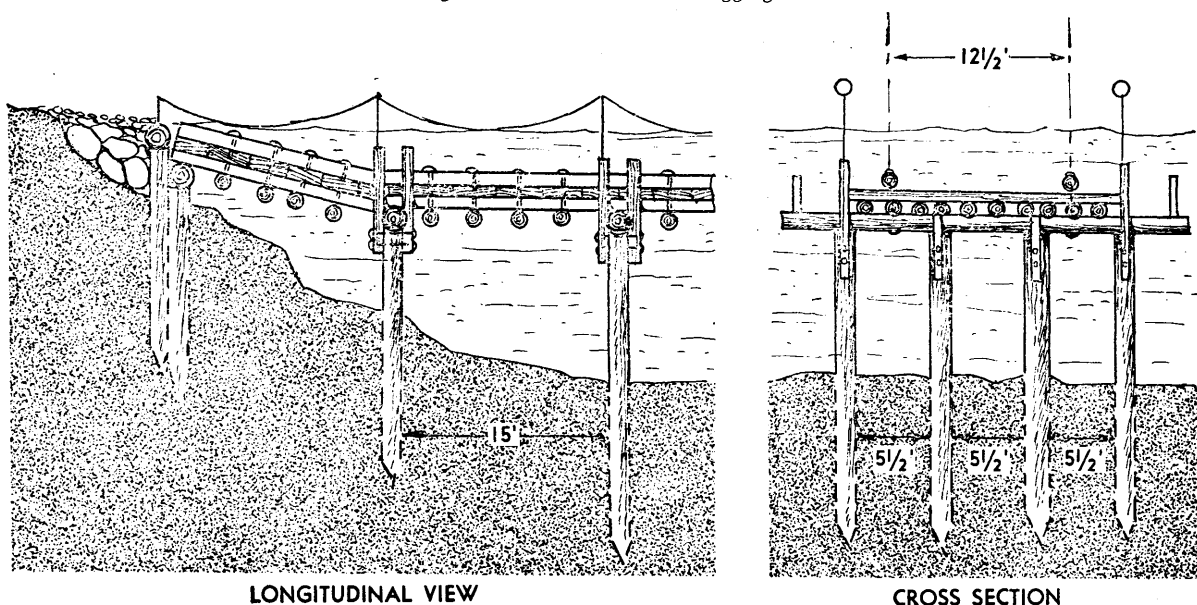


Figure 74. Underwater bridge on piles.

tion of the bridgeheads makes it possible to build up a concentration area from which offensive operations can be advantageously launched when the military situation warrants.

3. AMPHIBIOUS OPERATIONS

A number of medium-scale amphibious operations were successfully carried out by Soviet forces during the war. The outstanding tactical characteristic of every amphibious operation was coordination of the assault by sea with an offensive thrust on land converging on the same objective. The lack of strong naval support and armored landing craft for amphibious operation forced the Soviets into complete dependence on the element of surprise. In the capture of Petsamo, a sudden motor-torpedo-boat landing disrupted the shore defense system, permitting slower craft to land the main body of the assault units unmolested. The assaults on the Kerch Peninsular (1942-43) moved across a relatively narrow channel, facilitating surprise. The most extended amphibious operation took place in the capture of Constanza. In this operation, demoralized Rumanian units were in full retreat following a breakthrough of the Red Army on a wide front. The amphibious forces struck when enemy reserves were committed elsewhere and captured Constanza, thus outflanking the last defensive position available to the enemy.

Section V. OPERATIONS IN WOODS AND SWAMPS

1. GENERAL

Combat in wooded and swampy terrain is conducted by small self-sufficient Soviet units in a series of local actions. Tactical objectives are roads, clearings, road junctions, small woods, heights, and inhabited places. Engagements occur at short distances; visibility is limited; observation is difficult; and infiltration by small units is relatively easy. Movement of large forces is channelized; supply and evacuation must take place over the same routes. This necessitates strict control of road movements and careful planning. The effect of weather on road and ground conditions is magnified by the scarcity of roads and suitable deployment areas for heavy weapons. Combat in woods and swamps demands great physical effort from personnel and animals. The employment of motor vehicles for hauling supplies and pulling heavy equipment is limited to roads; elsewhere, horses and more frequently men have to carry extra loads and move heavy equipment.

Wire communications are used for all but mobile units. In forward areas whistles and signal lamps are also used. Because more time is required to string wire in woods and swamps than in open terrain, wire is not laid to the new position of a command or observation post prior to its displacement. Maintenance of wire communications is insured by frequently placed control stations and duplicate circuits. A signal construction platoon (28 men) can lay 3 to 4 miles of all-wire circuits per day.

2. USE OF WEAPONS

Combat in woods and swamps is conducted at short distances, which increases the importance of small arms and automatic weapons. As a rule, low-trajectory battalion and regimental weapons are assigned piecemeal to rifle companies, or even to rifle platoons. High-trajectory weapons—such as battalion and regimental mortars, and divisional howitzers—are retained under centralized control as much as possible. This is imperative not only because the fields of fire of low-trajectory weapons are so restricted that only high-trajectory weapons are capable of firing general support missions, but also because firing general missions requires a substantial expenditure of ammunition, which can at best be delivered to one or two places suitable for the deployment of massed artillery. The effectiveness of heavy weapons in woods and swamps depends not so much on their numbers as on uninterrupted supply of ammunition.

3. TACTICS OF SEPARATE ARMS

a. Infantry. Soviet infantry divisions with their light equipment, small daily tonnage requirements, horse-drawn transport, and readily available motive power (riflemen) are tactically mobile in woods and swamps. Infantry usually operates in small self-sufficient units, generally reinforced rifle companies. Rifle companies attack in a line of platoons. Reserves are drawn up close to the forward lines. Particular attention is directed toward the protection of flanks and lines of communications. Submachine-gun units are used in small groups (platoons or less) to infiltrate within the enemy lines, prepare ambushes, and counterattack. Anti-tank rifles and heavy machine guns, in addition to their normal employment, are used for sniping.

b. Cavalry. Cavalry is particularly adaptable to operations in difficult terrain, performing missions which in open country are generally assigned to motorized infantry. These missions include distant

reconnaissance, flank security, wide envelopment, pursuit, and raids.

c. Tanks. The Red Army considers that the effort expended in making possible a tank maneuver in apparently inaccessible terrain is fully recompensed by the surprise achieved by such a maneuver. After careful terrain and route reconnaissance, engineer and infantry detachments construct river and swamp bridges, fill holes, and, when necessary, lay corduroy roads. Tank units are assigned special engineer and infantry detachments which follow the tanks. A typical tank assault team consists of an engineer squad, a tank platoon (five light or three medium tanks), and from one to two rifle platoons. Such an assault team is followed by a second wave which, in addition to riflemen, engineers, and tanks, has light artillery or self-propelled guns.

4. IMPROVISATIONS

In crossing swamps the Red Army uses local resources as much as possible for the construction of improvised aids. Many improvisations devised in the early part of the war have been developed into standard methods. In crossing swamps the individual soldier uses short branches or bunches of twigs to make two mats about 2 yards long and 0.5 to 0.8 yards wide. He crosses the swamp by alternately placing one and carrying the other. A rifle squad uses two similar mats 3 to 4 yards long. Floating bridges are constructed from light logs and branches. A floating bridge made of 2- to 3-yard-long sections of woven fence will support horses and light anti-tank artillery when placed on large branches. Diagonally constructed floating corduroy roads 7 to 8 yards wide will support 8 to 10 tons. A similar floating bridge 2 to 3 yards wide can be used by a motorized column. For operations in the Pripet Marshes, Red Army riflemen were supplied with snow shoes.

5. DEFENSIVE USE OF SWAMPS

Small swamps are integrated into the system of defensive obstacles. Medium-sized swamps are used to cover frontal or flank approaches to the main defensive position. In this case, the line of outposts is placed within the swamp. Artificial islands of logs and branches are used to float security detachments and forward observation posts. Large swamps may be used in the same manner as medium-sized swamps, or the main defensive position may be established within the swamp area. From moss, turf, bushes, or branches, the Soviets construct corduroy communication roads and branch trails;

elevated gun, command post, and observation post positions; and communication trenches.

Section VI. WINTER WARFARE

1. GENERAL

The long and severe winters of the U. S. S. R. have compelled the Red Army to develop effective doctrines and techniques for winter operations.

The basic tactical principles for the employment of troops under winter conditions are the same as those developed for the conduct of operations in other seasons. However, low temperature, heavy snowfall, frozen ground, and changes in the relief and appearance of local objects create additional problems which the Red Army has successfully solved, and even capitalized, as testified to by the success of winter operations against the Germans.

The difficulties of winter conditions do not decrease the activity of the troops. On the contrary, the Soviets make skillful use of the cold weather and snow. Fortifications are built of snow and ice, and frozen rivers are used as airfields. The long nights in which snow lessens the degree of darkness are advantageously used for maneuvering and regrouping forces. The logistics—the movement of troops and supplies—is of greatest influence. The Red Army successfully employs tracked vehicles in snow, uses tractor-drawn sled trains and, for light operations and infiltrations, highly mobile motor sleds.

The Soviets are also well aware of the fact that winter climate increases the effectiveness of persistent chemical agents, keeping them active for several weeks.

Camouflage is of particular importance; all troops are issued white camouflage suits. All weapons are camouflaged either with white paint or by white tape to break the silhouettes. The concealment of tracks is particularly emphasized.

2. EMPLOYMENT OF ARMS

a. Coordination. Coordination of the various arms under winter conditions is complicated by the difficulties involved in the identification of landmarks and, in spite of the increased range of radio and wire communications in cold weather, in the utilization of communications equipment.

The rate of movement of tanks, infantry on skis, and cavalry is equalized to a considerable extent. As a rule, the maneuvering of troops is slowed up by the necessity of keeping to the roads.

The joint action of artillery with infantry is nor-

mally hindered by snow cover, in proportion to its depth and powdery condition. The cooperation of infantry with tanks is equally complicated. In pursuit of the enemy, the Soviets consider it is usually more advantageous to use infantry on skis than to employ cavalry. The necessity of careful use of camouflage often exerts retarding influences on the time factor of operations. In general, transportation, evacuation, and bringing up of supplies are associated with great difficulties.

The Soviets have found it necessary to make their operational plans for winter warfare flexible, providing alternatives to meet sudden changes in meteorological conditions. The operations culminating in the crossing of the Vistula in the winter of 1944-45 offer a good illustration of provisions made for possible changes in weather conditions. The Red Army developed two plans. One called predominantly for air support while the other depended mainly on artillery support. When the heavy overcast completely prevented the employment of aircraft, the second plan was available for successful execution.

b. Infantry (ski troops). Winter conditions not only restrict the movement of mechanized equipment, but also generally decrease the mobility of regular infantry troops. To overcome this difficulty, the Red Army equips part of its infantry with skis. The bulk of the infantry, however, is left without skis and depends on the use of good roads or sled transportation for mobility. A special adaptation of this principle of transportation is the use of tank-drawn armored sleds for infantry. Infantry on skis are found either in independent ski battalions or in ski units which are part of a rifle division. The normal armament of the ski battalions consists usually of rifles, submachine guns, light machine guns, and light mortars in the three rifle companies; heavy machine guns in the heavy-machine-gun company; and antitank rifles in the antitank-rifle platoon of the battalion. The lack of heavier mortars is explained by the tendency to keep the armament light in order to increase the mobility of this specialized unit. Depending on the particular mission and the combat situation, temporary ski formations of varying strengths are organized.

The use of skis greatly increases the mobility of the infantry. The individual skier can travel 4.2 to 7.2 miles per hour; small units can travel 2.4 to 5.4 miles per hour. The travel rate of a larger unit

usually does not exceed 3.6 miles per hour. Ski troops are also independent of the road net, a fact which makes ski troops well adapted for independent missions, such as penetrations to the rear of the enemy, destruction of installations, and cutting of communications.

As a rule the Soviets employ small groups of ski troops for reconnaissance, for raiding parties, for outflanking maneuvers, and for exploitation immediately after a break-through, when the regular infantry is limited to use of roads.

c. Motor-sled battalions. In addition to the ski battalions, the Red Army has organized numerous motor-sled battalions, some of which are combat battalions, while others are employed predominantly for transportation.

The combat motor-sled battalion is believed to be organized into three combat motor-sled companies, each with three platoons. One company has a total of ten sleds (three sleds per platoon and one for the company commander). The combat motor sled has one 7.62-mm machine gun "DT" as fixed armament. The battalion also has a supply company with ten transport sleds, three to four trucks, one tractor, and a maintenance platoon.

Combat motor-sled battalions stage surprise raids against enemy road columns or against an enemy who has no opportunity to deploy or to take up positions. They attack the flank or rear of deployed enemy troops and pursue the retreating enemy in cooperation with ski troops. They find employment as covering forces for troops dismounted from motorsleds, on open flanks of marching units of occupied islands and coastal sectors, and at the junctions of larger formations. Motor-sled battalions are used as reinforcements for motor-sled reconnaissance detachments; for reconnaissance in steppes, lakes, rivers, and coastal areas; and as lateral patrols behind their own defensive lines in a wide defensive sector to prevent the infiltration of enemy troops. In the defense they are committed in cooperation with infantry transported by sleds against enemy ski troops attempting outflanking maneuvers. They also maintain command communications and provide security for command posts. Their mobility makes them suitable for combat against enemy parachutists and for exploitation of a breakthrough in the enemy position, in close coordination with tanks, infantry, and ski troops.

Motor-sled transport battalions transport infantry cooperating with combat motor-sled units. They

carry infantry to the rear of the enemy and also bring up replacements and supplies. The return trips are utilized for evacuation of casualties and captured matériel. The transport battalions transport machine-gun, ski, submachine-gun, and close antitank-combat troops; and provide transportation for the command personnel of larger formations. Finally, they are used as searching parties looking for damaged tanks and planes, and for bringing up maintenance crews and guards.

The Soviets give careful attention to a wide variety of factors when employing motor sleds. Motor-sled battalions must be employed either as a unit or in not less than company strength. Their employment requires thorough preparation and smooth coordination with infantry, tanks, aircraft, artillery, and engineers. Weather and terrain conditions have to be taken into account. Loose snow decreases the speed of motor sleds; low temperature makes the starting of the motors more difficult. At least 4 hours in daylight are required to prepare the sleds and crews for commitment. Ravines, woods, and brush land increase operating difficulties.

On the march, the Soviets employ unloaded sleds at the point of the column to make tracks and mark the path to be followed. The normal daily travel capacity of motor sleds is 60 to 72 miles on average terrain. Forced marches can achieve daily distances of 120 miles. The Soviets calculate on 12 to 15 miles per hour as an average speed when determining the time required for a given distance. Roads with two-way traffic may not be used by motor sleds, which are confined to parallel roads or to cross-country movement. The sleds must not be overloaded when transporting men and material. The normal load consists of four armed men plus the driver and 880 pounds of material. The greatest economy of fuel and oil is required. The fuel tanks should always be at least one-third full.

d. Artillery. The movement of horse-drawn and motorized artillery in snow more than 12 inches deep is usually confined to roads, even though the Soviet artillery is mounted on sleds. Occasionally the roads have to be specially prepared with mats and logs to secure movement of the artillery. Tractors are often equipped with grousers. Occasionally the infantry helps by hand to bring its supporting artillery into position.

In snow less than 12 inches deep, cross-country movement is possible, although engineers often have to break a path.

Mortars, rockets, and pack artillery pieces, having greater mobility than regular artillery, find extensive employment. Artillery observation is greatly influenced by the weather. Observation on clear days is normally good, while in a foggy haze the range of observation is greatly decreased. Ground bursts on forward slopes normally show up as black spots on snow background. Air bursts are barely visible. Smoke shells are frequently used for adjustment. Winter conditions usually create favorable conditions for the operation of sound ranging units which the Red Army freely employs to counteract, at least partly, the limitation of visual observation in foggy weather.

Whenever possible the Soviet troops clear the ground for their gun positions to avoid displacements when firing.

e. Tanks. Tanks and self-propelled artillery may, up to a certain degree, replace field artillery in supporting infantry because their maneuverability is less hindered by an equal amount of snow, although it is affected by the character of the snow. Ammunition supply, however, is a serious problem. Heavy and medium tanks are able to pass through snow 20 to 24 inches deep; equipped with grousers they can pass through a maximum of 28 inches. Light tanks can move through snow 12 to 14 inches deep. Soft snow does not impede tank movement seriously because it is compressed by the weight of the tank to below tank-clearance level. Hard snow breaks under the weight of the tracks, and following tanks are suspended without contact of the tracks with the ground. Thus, tank movement in column formation is impossible over deep, hard snow.

The Soviets equip tanks with grousers for movement over slippery terrain. In addition, special mats are used for movement over snow slopes.

Frozen rivers and lakes cease to be an obstacle for tanks when frozen to a certain thickness: 28 to 40 inches of ice can carry a heavy tank; 24 inches is necessary for a medium tank; and 12 inches for a light tank. Infantry can cross on ice 4 inches thick.

Since tank tracks are clearly visible in fresh snow, the Russians emphasize the movement of tanks in column, during the night, or in a snow storm. Often the last tank in the column will drag sleds or trees behind to erase the tracks and create the appearance of an ordinary trail.

When tanks reach an inhabited populated sector, they are always well dispersed and are brought into barns or destroyed buildings, or alongside walls of buildings. In the open they are covered with snow

or other natural camouflage material, depending on the locality. Efforts are made to make warm shelter available for the tanks. To assure constant combat readiness in wintertime, tank units are provided with water and oil heaters and other technical equipment.

f. Engineers. The work of the Soviet engineers becomes especially important in winter operations. They are responsible for road repair and construction; the erection of warm shelters for men, horses, and matériel; employment of special kinds of winter camouflage; and for other normal engineer responsibilities. One of the main tasks, however, is the construction of winter obstacles, using snow and ice. The procurement of drinking water, particularly for horses, occasionally presents difficulties.

g. Cavalry. Under winter conditions, the Soviets often encounter great difficulties in employing their cavalry units as prescribed by Red Army doctrine; that is, in combination with supporting tanks and artillery as an independent striking force in terrain not accessible to motorized equipment. In deep snow the mobility of cavalry is often reduced to 2.4 to 3 miles per hour; movement is often restricted to roads or to the tracks made by tanks. In snow up to 12 inches deep, cavalry attacks of brief duration are possible after thorough terrain reconnaissance. Successful operations have been conducted jointly by infantry on skis and cavalry.

The Soviets are well aware of the special care that horses require during winter operations. They therefore make as much use as possible of inhabited communities for bivouac. In uninhabited regions they construct protective shelters from local materials.

3. RECONNAISSANCE

Thorough ground reconnaissance, the Red Army teaches, is of the greatest importance for winter operations. Reconnaissance must, in addition to its normal missions, reconnoiter the terrain in regard to special weather and visibility conditions. The Soviets normally assign this mission to ski infantry units, although cavalry and motorized units may also be used when the terrain conditions permit. Cavalry and motorized units are usually limited to reconnaissance along roads.

Distances considered to be within the capabilities of units of varying strength assigned to reconnaissance missions are: 21 to 30 miles for a strong reconnaissance detachment of approximately battalion strength; 9 to 18 miles for reconnaissance com-

panies; up to 6 miles for reconnaissance platoons; up to 1.8 to 3 miles for reconnaissance sections. In snowstorms, the distances are shortened by one-half because of the difficulties of observation and reporting.

Aerial reconnaissance in wintertime is considered extremely effective and furnishes valuable information as to the locations of enemy installations, obstacles, and troop concentration, and the enemy disposition on the front.

4. OFFENSIVE OPERATIONS

The objectives of offensive operations in winter remain the same as in other seasons, though the seizure of inhabited areas and road nets is of increased importance.

In the early part of the war the Soviets carried out attacks against the enemy lines of communication. This was facilitated by the German defense. Soviet infiltration in force by units up to a cavalry corps in size was possible through wide gaps between strongly fortified centers of defense. In the latter part of the war, when German defenses were organized in continuous lines of defensive positions built up in depth, the Red Army was forced to develop its offensives into operations of combined arms with all the characteristics of well planned and large-scale attacks.

The Soviets carefully time their offensive operations. They do not hesitate to conduct their attacks during blinding snowstorms which promote overwhelming surprise. In East Prussia, the Soviets outflanked the strongly fortified German position with large tank formations, which they moved across the ice during a heavy snowstorm, attacking the German position from the flank next to the sea, where they were least expected. In the interest of achieving surprise, the Soviets also do not hesitate to begin their attacks during the night.

Characteristic of Red Army winter offensives is the proximity of the line of departure to the front lines to avoid tiring the troops before contacting the enemy. Infantry on skis normally advances first, supported by heavy infantry weapons mounted on skis or sleds and by artillery and tanks which, however, are often limited in their advance to existing roads and sections of favorable terrain. Other ski units, cavalry, and tanks are used whenever possible for outflanking maneuvers, in order to block the exits of inhabited areas and thereby prevent the enemy from destroying bases useful for further operations by friendly main forces.

5. DEFENSIVE OPERATIONS

The same organization of stabilized defense is used throughout the year. However, extensive use of snow and ice obstacles is made in constructing defensive positions in wintertime. The selection of the defensive area is influenced by the location of inhabited areas, forests, and groves, which, with adaptations, may become important strong points. The Soviets also emphasize the necessity of adequate shelter for the troops to keep them warm and maintain their combat efficiency. They make extensive use of dummy installations, which they secure with mines and booby traps.

The Red Army prepares heavy weapons for unobserved fire into previously registered areas, covering the gaps between strongpoints to avoid successful enemy offensive operations during periods of limited observation. When the enemy succeeds in breaking into the Soviet defensive zone, with the intention of seizing built-up areas, the Soviets strive to halt him by previously adjusted artillery fire and by counterattacks.

During an enemy attack, artillery tries to slow his advance by forcing him off the roads and thus compelling him to advance crosscountry. Counterattacks are carried out in previously studied and prepared directions, usually on the flanks of the enemy units. Whenever possible, the Soviets counterattack with skiers, who move downhill, with the wind and sun in the face of the enemy. Counterattacks with shock troops without skis and supported by heavy infantry weapons and artillery, are carried out only for short distances.

When enemy pressure forces the Soviets to withdraw from action, they try to disengage themselves from the enemy during the night. In daytime they make extensive use of smoke. Ski troops are normally assigned as covering forces.

Section VII. MOUNTAIN OPERATIONS

1. BASIC PRINCIPLES

The tactical employment of troops, weapons, and equipment in mountain warfare is dictated by terrain and weather conditions, and the attendant logistical problems. Operations in the mountains impose great strain on men, animals, and materiel. Rapidly changing weather, road and soil conditions, and mountain altitudes necessitate the issuance of special equipment, additional clothing, and increased rations. Greater organizational weights and the decreased loads which can be carried by men and

animals require larger unit trains. Whenever terrain conditions permit, narrow-gauge railroads are built for divisions and higher organizations. Tractors are assembled along the route to haul supplies over difficult areas. When other forms of transportation fail, air transport is used. Regimental and divisional supply and evacuation installations are placed closer to forward units. The divisional field hospital and service area must not be more than 2 hours' journey from the corresponding regimental installations. Contrary to normal Soviet practice, signal communications for the purpose of regulating traffic are established along supply routes in mountains.

Antiaircraft plays a prominent part in mountain operations. Both in the offensive and defensive, antiaircraft guns are placed at critical positions where traffic is channelized. Organic antiaircraft is supplemented by GHQ units which are assigned for duration of the mountain operations. Searchlight units are assigned for the defense of important railheads and supply dumps.

Mountain combat lacks the unity which characterizes combat on rolling terrain; the inaccessibility of certain areas and the lack of sufficient roads prevent the organization of continuous fronts. Combat in the mountains assumes a piecemeal character, resolving itself into separate, more-or-less isolated conflicts by small, self-sufficient units difficult to retain under centralized control. This necessitates initiative, within the expressed intentions of the higher command, on the part of subordinate commanders, as the appropriate actions of even individual units and elements often lead to decisive tactical success.

There are often gaps between friendly front sectors which may be occupied by the enemy. The appropriate disposition of second echelon and reserve troops is of utmost importance for coping with enemy attempts at envelopment, outflanking, and infiltration. Up to one-sixth of the entire infantry forces and up to one-fourth of cavalry should be designated for this purpose.

The abundance of dead spaces and areas of non-visibility in the mountain lowers the effectiveness of arms for grazing fire at far and average distances, and gives added importance to high-trajectory weapons (howitzers and mortars). Snipers and submachine gunners play an important role in preparing ambushes and infiltrating through enemy lines. Direct fire, interdiction fire, bayonets, and hand grenades are used to great advantage.

2. CONTROL OF COMBAT

For uninterrupted control of combat in the mountains, command posts must be located closer to the troops. The security of command posts is provided for by advance and flank detachments which occupy heights commanding approaches to them.

In order for the commander to maintain constant contact with rapidly changing mountain combat conditions, he must not leave his command observation post unless under the severest necessity. For uninterrupted personal observation of battle progress, the commander moves forward to a new command observation post immediately after the seizure of crests and spurs obstructing his observation.

When direct communication between command posts and operating units is impossible, forward message centers are moved out along the axis of communications.

In spite of dead spaces and periodic bad reception due to mountain relief and atmospheric conditions, radio is the basic means of communication in the mountains, especially for communication with isolated units and aviation. The Red Army increases the employment and reliability of radio in mountain operations by careful training in the selection of frequencies, the siting of radios, and the adjustment of antennas. Visual signalling is also widely used because of the simplicity of setting up posts and stations. Liaison planes, foot and mounted messengers, and dogs (for communication over distances up to 1 to 2 miles) are also used. Use of wire is limited by such factors as time consumed in laying it (two times that on rolling terrain), possibilities of enemy tapping, damage to wire due to weather conditions, and difficulties of replacing damaged circuits.

3. THE OFFENSIVE

The offensive in mountains resolves itself into a series of attacks on successive objectives such as heights, ridges, passes, and valleys. The plan of maneuver generally consists of the isolation of separate tactical objectives and their annihilation by double or single envelopment; thus, the main effort must generally be supplemented by several secondary efforts. Successive displacement of supporting weapons between successive phase lines is imperative. In attacking enemy positions arranged in altitudinal levels, the fire of all weapons is first concentrated on the lowest level. While infantry attacks that level, artillery and mortars shift their fire to the firing positions of the next level.

The offensive in the mountains is conducted either along the mountain chain or across it.

An offensive along a ridge combines a break-through in the valley with an encircling maneuver over the mountains, and the seizure of commanding heights and road junctions in the enemy rear and flanks. The break-through is accomplished by a heavy concentration of artillery, tanks, and aviation. In the development of the break-through by mobile formations, the seizure of road junctions in the enemy rear may lead to the surrounding and defeat of his forces on important sectors of the front. In continuing the advance along a valley, friendly flanks and rear must be secured by airborne troops and mountain-infantry units who seize heights commanding the valley. Advancing troops must support flank security units by aerial attacks, artillery fire, and maneuvers into the rear of the enemy defending the heights; at the same time, these flank security units assist the advancing main body by fire and maneuver in the flank and rear of enemy units barricading the valley.

An offensive across a ridge is based on the possession of mountain passes. Mountain passes may be secured by the seizure of heights commanding them, by attacking the enemy's rear on the reverse side of the ridge in a rapid outflanking maneuver, by landing airborne troops in the rear of enemy units defending the pass, and, simultaneously with these actions, by launching an aggressive frontal assault, usually in coordination with aviation. Offensive operations assume the characteristics of close combat.

4. THE DEFENSE

Mountain terrain provides favorable locations for defensive positions while at the same time irregular relief, deep and hidden approaches, and the isolation of commanding heights and crests facilitate outflanking and enveloping maneuvers by the enemy. A successful defense depends on thorough reconnaissance, well organized outpost zone action, and timely and sudden counterattacks by second echelon and reserve troops to prevent these maneuvers.

Observation posts are established up to 9 to 12 miles from the defensive front line; communication with them is maintained by radio and visual signalling—relay points are established when necessary.

In the outpost zone, security elements cut off roads and approaches; secure flanks, intervals between defensive positions, and salients; and hold the enemy

until the approach of support troops. Support troops in the outpost zone parry enemy outflanking maneuvers; destroy small groups attempting infiltration; and, when necessary, cover the withdrawal of friendly elements. In defense of the outpost zone, ambushes and flank fire barrages are used extensively.

The main defensive positions may be organized either along or across the mountain ridge; in either case the front line is situated on forward slopes, although a portion of the forces must be disposed on reverse slopes. Firing positions are echeloned vertically as well as in depth. In defending a mountain valley, strong points are echeloned on adjacent heights to cover the valley with cross fire. In wooded terrain, defensive positions are organized at the front edge of the woods or on commanding heights. In the latter case, the woods are used as a natural obstacle to trap the enemy. Elevated platforms are built in trees for heavy machine guns and observation posts. In all cases, antitank and anti-personnel mines, obstacles of all types, and artificial rock and landslides are widely employed.

The artillery and infantry antitank fire plan is developed to cover approaches to defensive positions and dead spaces by both frontal and flanking fire. Divisional artillery is always centralized when operating in broad valleys and foothills. It is partially centralized in support of the main defensive positions, and decentralized in support of secondary defensive positions. Submachine-gun teams are assigned to each artillery and mortar position for protection against infiltrating enemy units.

Even if the enemy succeeds in breaking into the defensive zone and begins developing his initial success, isolated heights must be firmly held. The second echelons of the army (corps) and divisional (brigade) reserves, in cooperation with tanks, then counterattacks to support threatened points as soon as the enemy drives over the crest; at this point his observation is limited and he is deprived of artillery support.

5. ROLES OF THE VARIOUS ARMS

a. Infantry. The infantry carries the chief weight of combat in the mountains. Under conditions where the support of other arms cannot always be relied upon, and where units often operate with open flanks and even without communication with adjacent units, unsupported infantry is best adapted to conduct successful mountain warfare. It is cap-

able of filtering independently through enemy defenses; reaching his flanks and rear from the most unexpected and weakly defended areas; and, by using bayonets, hand grenades, and point-blank fire, of destroying him.

To provide for uninterrupted artillery support when possible, the infantry must assist it in getting through inaccessible sectors and, by the seizure of heights, provide it with necessary observation.

For combat in high mountain sectors, where the relief is sharply cut and communications are unreliable, special mountain elements may be attached to regular infantry. Often, infantry units which have received special training—orientation in fog, night, and snow; camouflage techniques; construction of light defensive fortifications—and have special attached equipment are designated for combat in high mountain areas. If road conditions are bad, or roads are lacking altogether, infantry must be strongly reinforced with engineers and additional pack animals.

b. Cavalry. Cavalry is the mobile arm in mountain operations. It usually operates offensively, most often in meeting engagements and in attack. It often conducts mobile defense, using ambushes and surprise attacks, but is used only in special instances for stable defense.

Specifically, it is well adapted to surrounding enemy main groupings; developing a break-through made by the infantry by disrupting enemy attempts to stabilize the front; and pursuing the enemy with the intention of reaching rear areas and blocking his retreat. It is capable of supporting army operations by covering the concentration and deployment of forces; seizing and holding especially important tactical features before the approach of the main forces; securing flanks; covering retreat in the most threatened areas; and conducting reconnaissance and partisan activities in the enemy rear.

Cavalry divisions, assigned to armies or infantry corps, usually function independently for the execution of specific missions to which they are adapted. In sectors along wide valleys and in low mountains, larger cavalry units may be used. Cavalry is reinforced with tanks, infantry, artillery, and special units according to the mission assigned to it.

In areas in the enemy rear or where there are not sufficient roads, forage and provisions are supplied by air transport.

c. Artillery. Mountain relief restricts the movement of artillery and limits its flexibility of

fire. Artillery is, therefore, attached directly to the individual units it is to support. Regimental anti-tank artillery and, in certain instances, divisional artillery guns are employed by platoon or even separate pieces in direct support of infantry groups. Infantry and pioneer commands are assigned to artillery units to secure their movement. Pack mountain batteries accompany infantry in high mountain areas.

An extensive network of vertical and lateral observation posts must be set up to ensure wide fields of observation. Command observation posts are moved out to forward units and located not only within their own sectors but, if necessary, also in adjacent sectors. Reserve observation posts are located in close proximity to the firing positions. Radio and visual signals are used for communication between observation posts and firing positions.

Mountain terrain and sharp changes in the direction and speed of wind hinder the use of artillery instrumental reconnaissance. Observation by paired observers is widely practised for determining the exact location of targets, and aviation is used for reconnaissance of enemy batteries and adjustment of fire.

The choice of firing positions for light field artillery batteries is governed not only by the minimum range of the guns but also by the fact that dead areas, abundant in mountain terrain, must be avoided as far as possible. Thus, firing positions are located on adjacent sectors and heights for flanking fire, and are moved back to use other trajectories.

Firing positions for high-trajectory guns (mortars and howitzers) may be located behind high natural covers and in deep valleys, thus bringing into range areas which are inaccessible to other batteries and permitting fire over the heads of advancing friendly infantry for longer periods. Firing positions and approaches to them should be carefully camouflaged by engineers.

Since the lower atmospheric pressure in high areas strongly affects the flight of shells, special auxiliary firing tables must be provided.

d. Tanks and armored cars. Tanks may operate in mountainous terrain if slopes do not exceed 30°. In areas not permitting the massing of tanks, they are distributed among infantry and cavalry units. The employment of tanks must be preceded by terrain and route reconnaissance. Special obstacle-clearing groups are assigned to each tank unit.

The basic mission of tanks in the mountains is the direct support of infantry. In close cooperation with infantry, and together with artillery and aviation, tanks operate as part of the main forces or on the flanks and in the rear of the enemy as part of outflanking units. Tanks also seize phase lines, inhabited points, defiles, road junctions, and passes; pursue the enemy; and cover the withdrawal of friendly units. Light tanks may be used in small independent groups.

One and one-half to two times the normal amount of fuel and lubricating oil is required in the mountains. Each tank must be provided with spare fuel drums; tractors are used to drag them on steep slopes and across wide passes to conserve fuel. Reserve spare parts must be provided. Two crews for each tank are necessary to eliminate overfatigue.

Armored cars are used on hard soil or wherever passable to them. They execute reconnaissance; seize inhabited points, narrow passes, road junctions, and crossings; and guard rear roads and communications.

e. Engineers. Each independent unit or element, regardless of its composition, must be reinforced with engineers for assistance in overcoming terrain obstacles, for building bridges, laying corduroy and other types of roads, forcing rivers, getting through swamps, conducting terrain reconnaissance, etc.

f. Airborne troops. Airborne troops (especially parachute troops) are used effectively for mountain operations in the enemy rear and on his flanks in coordination with land forces. Even small airborne groups equipped with automatic weapons and explosives can often decide the outcome of battle by seizing commanding heights and passes and disrupting the enemy system of communications.

Where level plateaus and valleys are not available for landing airborne troops of other types, parachutists are used. Landings must be preceded by careful and secret terrain reconnaissance.

Support aviation cooperates with airborne troops and parachute groups by bombing mountain roads and mobile enemy units.

Due to the lack of sufficient roads, combat with enemy airborne troops is chiefly the mission of support aviation, which destroys enemy equipment and personnel at their landing airdromes or attacks the enemy in the air before troops can land and disembark.